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L43 ANSWER 1 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2009:30310 HCAPLUS Full-text
TI Study on the Formation of Self-Assembled Monolayers on Sol-Gel Processed Hafnium Oxide as Dielectric Layers
AU Ting, Guy G.; Acton, Orb; Ma, Hong; Ka, Jae Won; Jen, Alex K.-Y.
CS Department of Chemistry, University of Washington, Seattle, WA, 98195-1700, USA
SO Langmuir ACS ASAP
CODEN: LANGD5; ISSN: 0743-7463
PB American Chemical Society
DT Journal
LA English
AB High dielec. constant (k) metal oxides such as hafnium oxide (HfO_2) have gained significant interest due to their applications in microelectronics. In order to study and control the surface properties of hafnium oxide, self-assembled monolayers (SAMs) of four different long aliphatic mols. with binding groups of phosphonic acid, carboxylic acid, and catechol were formed and characterized. Surface modification was performed to improve the interface between metal oxide and top deposited materials as well as to create suitable dielec. properties, i.e., leakage current and capacitance densities, which are important in organic thin film transistors. Attenuated total reflectance Fourier transform IR (ATR-FTIR) spectroscopy, contact angle goniometry, atomic force microscopy (AFM), and simple metal-HfO_2-SAM-metal devices were used to characterize the surfaces before and after SAM modification on sol-gel processed hafnium oxide. The alkylphosphonic acid provided the best monolayer formation on sol-gel processed hafnium oxide to generate a well-packed, ultrathin dielec. exhibiting a low leakage c.d. of 2 + 10-8 A/cm2 at an applied voltage of -2.0 V and high capacitance d. of 0.55 μF/cm2 at 10 kHz. Dialkylcatechol showed similar characteristics and the potential for using the

catechol SAMs to modify HfO_2 surfaces. In addition, the integration of this alkylphosphonic acid SAM/hafnium oxide hybrid dielec. into pentacene-based thin film transistors yields low-voltage operation within 1.5 V and improved performance over bare hafnium oxide.

CC 76 (Electric Phenomena)

L43 ANSWER 2 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2008:837925 HCAPLUS Full-text
DN 149:254459
TI Rigid-rod sensitizers bound to semiconductor nanoparticles
AU Taratula, Olena; Galoppini, Elena
CS Chemistry Department, Rutgers University, Newark, NJ, 07102, USA
SO Materials Research Society Symposium Proceedings (2008), Volume Date 2007, 1031E(Nanostructured Solar Cells), No pp. given, Paper #: 1031-H09-50
CODEN: MRSPDH; ISSN: 0272-9172
URL: http://www.mrs.org/s_mrs/bin.asp?CID=11349&DID=210704&DOC=FILE.PDFhttp://www.mrs.org/s_mrs/bin.asp?CID=11349&DID=210704&DOC=FILE.PDF
PB Materials Research Society
DT Journal; (online computer file)
LA English
AB A series of "rigid-rod" dyes with an organic chromophore (pyrene or coumarin) attached through an oligophenylenethynylene (OPE) rigid bridge, linear or branched, to an anchoring isopthalic acid unit (Ipa) were synthesized and studied for solar cells (DSSCs) applications. The new dyes were attached to metal oxide (MOn = TiO_2, ZrO_2 and ZnO) nanoparticles films via the two COOH binding groups on the Ipa unit to investigate their binding and photophys. properties at the semiconductor surface. FTIR-ATR spectra show that all dyes did bind to the metal oxide films through carboxylate bonds. Fluorescence emission on insulating ZrO_2 films was employed to study aggregation of the organic rigid-rods. Studies of the pyrene rigid-rods in solar cells showed near quant. conversation of absorbed photons into electricity.
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT 83-44-3, Deoxycholic acid 1314-13-2, Zinc oxide, properties 1314-23-4, Zirconia, properties 13463-67-7, Titania, properties 19694-02-1, 1-Pyrenecarboxylic acid 55804-65-4, Coumarin 343 910469-92-0 910469-93-1 910469-94-2 910470-35-8 1044748-50-6 1044748-51-7 1044748-52-8
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(rigid-rod sensitizers bound to semiconductor nanoparticles)
IT 1314-13-2, Zinc oxide, properties 1314-23-4, Zirconia, properties 13463-67-7, Titania, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(rigid-rod sensitizers bound to semiconductor nanoparticles)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 3 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2006:388347 HCAPLUS Full-text
DN 144:436094
TI Nanostructured material and process for its preparation
IN Gaubicher, Joel; Guyomard, Dominique; Dubarry, Matthieu; Moreau, Philippe; Deschamps, Marc
PA Batscap, Fr.; Centre National De La Recherche Scientifique Cnrs
SO Fr. Demande, 22 pp.
CODEN: FRXXBL
DT Patent
LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2877146	A1	20060428	FR 2004-11243	20041022 <--
	FR 2877146	B1	20070119		
	CA 2584231	A1	20060504	CA 2005-2584231	20051018 <--
	WO 2006045923	A2	20060504	WO 2005-FR2581	20051018 <--
	WO 2006045923	A3	20061130		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	EP 1831945	A2	20070912	EP 2005-809230	20051018 <--
	EP 1831945	B1	20080430		

R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	CN 101065866	A	20071031	CN 2005-80036269	20051018 <--
	AT 393966	T	20080515	AT 2005-809230	20051018 <--
	JP 2008516886	T	20080522	JP 2007-537327	20051018 <--
	ES 2304732	T3	20081016	ES 2005-809230	20051018 <--
	KR 2007108357	A	20071109	KR 2007-711606	20070522 <--
PRAI	FR 2004-11243	A	20041022 <--		
	WO 2005-FR2581	W	20051018		

AB The invention relates to a material nanostructure. The material is a nanostructure carbonaceous material consisting of agglomerates of small needles of Li1+αV3O8 and of βLixV2O5 (0.1≤ α ≤ 0.25 and 0.03 ≤ x ≤ 0.667) , surrounded by a discontinuous layer of spherical particles of carbon. It is obtained by a process consisting of preparing a carbonaceous precursor gel by setting in contact with carbon some V2O5-α and a Li precursor, in quantities such as the ratio of concns. [V2O5]/[Li] is included between 1.15 and 1.5, and that the mass ratio of (carbon)/ (carbon + V2O5 + Li precursor) is 10 to 15, and to subject the gel to a thermal treatment including one 1st stage with 80 °C - 150 °C during 3-12 h, and one 2nd stage between 300 °C and 350 °C, during from 10 min to 1 h, under an atmospheric of nitrogen or argon. This product can be the active material in a pos. electrode.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nanostructure nanoparticle agglomerated lithium vanadium oxide carbon cathode material; secondary lithium battery electrode active material sol gel processing

IT Carboxylic acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkali metal salts, lithium salts, precursor; nanostructured material for secondary battery electrodes and process for its preparation)

IT Agglomerates (clustered mass)
Agglomeration
Annealing
Battery electrodes
Controlled atmospheres
Crystal whiskers
Gelation
Heat treatment
Nanoparticles

Nanostructures
  Sol-gel processing
Xerogels
   (nanostructured material for secondary battery electrodes and process
   for its preparation)
IT 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7732-18-5,
Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
   (nanostructured material for secondary battery electrodes and process
   for its preparation)
IT 1314-62-1, Vanadium oxide (V2O5), reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
   (α-; nanostructured material for secondary battery electrodes and
   process for its preparation)
IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
   (nanostructured material for secondary battery electrodes and process
   for its preparation)
IT 1314-62-1, Vanadium oxide (V2O5), reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
   (α-; nanostructured material for secondary battery electrodes and
   process for its preparation)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 4 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2005:519205 HCAPLUS Full-text
DN 143:61467
TI Method for preparing nano iron oxide red
IN Fan, Honglei; Song, Baozhen; Liu, Juhua
PA Process Engineering Inst., Chinese Academy of Sciences, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp. given
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1508192	A	20040630	CN 2002-155680	20021213 <--
	CN 1230472	C	20051207		
PRAI	CN 2002-155680		20021213 <--		

AB The invention relates to a nano iron oxide red preparing method, fully mixing crystal converting agent and lye under normal temperature and pressure, then stirring and adding the product obtained by oxidizing soluble trivalent or bivalent ferric salt solution at the same time to form gelation, then adding in buffer solution, maintaining the pH value of the mixed liquid within 8-12, heating and maintaining the reaction temperature within 85-110°C, aging for 5-20 min, centrifuging turbid liquid by centrifugal pump, washing for 3-5 times, drying for 1.5-3 h under 25-50°C, and grinding to obtain single disperse nano alpha-Fe2O3 particles. The particle size can be regulated and controlled within 10-100 nm, the distribution even.
IC ICM C09C0001-24
CC 42-6 (Coatings, Inks, and Related Products)
Section cross-reference(s): 41, 49
IT Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
   (crystal converting agent; method for preparing nano iron oxide
   red)
IT 50-21-5, Lactic acid, uses 60-35-5, Acetamide, uses 75-12-7,
Formamide, uses 77-92-9, Citric acid, uses 87-69-4, Tartaric acid,

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     uses   108-24-7, Acetic anhydride   123-62-6, Propionic anhydride
     143-19-1, Sodium oleate   1558-67-4   2386-53-0, Sodium dodecylsulfonate
     RL: NUU (Other use, unclassified); USES (Uses)
        (crystal converting agent; method for preparing nano iron oxide
        red)
IT   1309-37-1P, Iron oxide, uses
     RL: IMF (Industrial manufacture); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (method for preparing nano iron oxide red)
IT   1309-37-1P, Iron oxide, uses
     RL: IMF (Industrial manufacture); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (method for preparing nano iron oxide red)

L43  ANSWER 5 OF 22  HCAPLUS  COPYRIGHT 2009 ACS on STN
AN   2003:989764  HCAPLUS  Full-text
DN   140:51692
TI   Method of forming fine titanium oxide particles from a sol for
     use in a photoelectric conversion device
IN   Tsukahara, Jiro
PA   Fuji Photo Film Co., Ltd., Japan
SO   U.S. Pat. Appl. Publ., 21 pp.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 2
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   US 20030230335       A1    20031218   US 2003-461465         20030616 <--
PRAI JP 2002-175455       A     20020617  <--
     JP 2002-276932       A     20020924  <--
AB    The invention relates to a method of forming fine titanium oxide particles
      from a sol for use in a photoelec. conversion device, such that the crystal is
      in the anatase phase and has excellent dispersion properties.  The sol is
      formed in the steps of hydrolyzing an orthotitanate, and dehydrating the
      resultant hydrolyzate in the presence of an acid catalyst, where an alc.
      contained in the reaction liquid is removed before the dehydrating step.  The
      fine titanium oxide particles are produced as the sol is heated under
      pressure.
IC   ICM  H01L0031-00
     ICS  C01G0023-04
INCL 136252000; 423608000
CC   76-5 (Electric Phenomena)
     Section cross-reference(s): 66
ST   fine particle titanium oxide sol photoelec conversion device
IT   Dehydration
     Hydrolysis
        (TiO2 formed by; method of forming fine titanium oxide particles from
        sol for use in photoelec. conversion device)
IT   Titanates
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (alkoxides, TiO2 precursor; method of forming fine titanium oxide
        particles from sol for use in photoelec. conversion device)
IT   Acids, uses
       Carboxylic acids, uses
     RL: CAT (Catalyst use); USES (Uses)
        (catalyst; method of forming fine titanium oxide particles from
        sol for use in photoelec. conversion device)
IT   Photoelectric devices
        (converters, dye-sensitized; method of forming fine titanium oxide
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       particles from sol for use in photoelec. conversion device)
IT   Particles
       Sol-gel processing
        (method of forming fine titanium oxide particles from sol for
        use in photoelec. conversion device)
IT   Metal alkoxides
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (titanium, TiO2 precursor; method of forming fine titanium oxide
        particles from sol for use in photoelec. conversion device)
IT   546-68-9, Tetraisopropyl orthotitanate
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (TiO2 precursor; method of forming fine titanium oxide particles from
        sol for use in photoelec. conversion device)
IT   64-19-7, Acetic acid, uses   7697-37-2, Nitric acid, uses
     RL: CAT (Catalyst use); USES (Uses)
        (catalyst; method of forming fine titanium oxide particles from
        sol for use in photoelec. conversion device)
IT   13463-67-7P, Titania, uses
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (sol, particles; method of forming fine titanium oxide
        particles from sol for use in photoelec. conversion device)
IT   13463-67-7P, Titania, uses
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (sol, particles; method of forming fine titanium oxide
        particles from sol for use in photoelec. conversion device)

L43  ANSWER 6 OF 22  HCAPLUS  COPYRIGHT 2009 ACS on STN
AN   2002:276236  HCAPLUS  Full-text
DN   136:317170
TI   Synthesis of colloidal nanocrystals
IN   Peng, Xiaogang; Peng, Zuoyan; Qu, Lianhua
PA   The Board of Trustees of the University of Arkansas, USA
SO   PCT Int. Appl., 63 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
     ---------------     ----   --------   --------------------  --------
PI   WO 2002029140        A1    20020411   WO 2001-US31239       20011004 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
             PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
             US, UZ, VN, YU, ZA, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     CA 2424415           A1    20020411   CA 2001-2424415       20011004 <--
     AU 2002024348        A     20020415   AU 2002-24348         20011004 <--
     US 20020066401       A1    20020606   US 2001-971780        20011004 <--
     US 6872249           B2    20050329
     EP 1337695           A1    20030827   EP 2001-986328        20011004 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     JP 2004510678        T     20040408   JP 2002-532701        20011004 <--
PRAI US 2000-237903P      P     20001004  <--
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     US 2001-275008P      P     20010312  <--
     WO 2001-US31239      W     20011004  <--
AB   A method of synthesizing colloidal nanocrystals is disclosed using metal
     oxides or metal salts as a precursor.  The metal oxides or metal salts are
     combined with a ligand and then heated in combination with a coordinating
     solvent.  Upon heating, the metal oxides or salts are converted to stable
     soluble metal complexes.  The metal complexes are formed by cationic species
     combining with the ligands and/or with the coordinating solvent. Finally, an
     elemental chalcogenic precursor, for example, Se, Te, or S, is introduced into
     the soluble metal complex to complete the formation of the nanocrystals at a
     controllable rate.  High-quality CdSe, CdTe, and CdS nanocrystals are produced
     when CdO is used as the Cd precursor.  With the present method, the size, size
     distribution, and shape (dots or rods) of the resulting nanocrystals can be
     controlled during growth.  For example, the resulting nanocrystals are nearly
     monodisperse without any size separation  Further, the method represents a
     major step towards a green chemical approach for synthesizing high-quality
     semiconductor nanocrystals.
IC   ICM  C30B0007-08
     ICS  C30B0007-14; C30B0029-40; C30B0029-48
CC   75-1 (Crystallography and Liquid Crystals)
     Section cross-reference(s): 66
ST   colloidal nanocrystal
IT   Carbonates, processes
     Salts, processes
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (Group IIIA and Group IVA; synthesis of metal chalcogenide
        nanocrystals by combining metal oxides or
        metal salts with ligand and/or with coordinating solvent)
IT   Halides
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (Group IIIA element halides; synthesis of metal chalcogenide
        nanocrystals by combining metal oxides or
        metal salts with ligand and/or with coordinating solvent)
IT   Halides
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (Group IVA element; synthesis of metal chalcogenide
        nanocrystals by combining metal oxides or
        metal salts with ligand and/or with coordinating solvent)
IT   Transition metal salts
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (carbonates; synthesis of metal chalcogenide nanocrystals by
        combining metal oxides or metal salts with ligand
        and/or with coordinating solvent)
IT   Transition metal salts
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (carboxylates; synthesis of metal chalcogenide nanocrystals
        by combining metal oxides or metal salts with
        ligand and/or with coordinating solvent)
IT   Amines, processes
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PROC (Process)
        (fatty, ligand and coordinating solvent; synthesis of metal
        chalcogenide nanocrystals by combining metal
        oxides or metal salts with ligand and/or with coordinating
        solvent)
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IT Group IIIA element compounds
Group IVA element compounds
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(halides; synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT Fatty acids, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(ligand and coordinating solvent; synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT Group IIIA element chalcogenides
Group IVA element chalcogenides
Transition metal chalcogenides
RL: CAT (Catalyst use); CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nanocrystals; synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT Catalysts
Electroluminescent devices
Quantum dot devices
Solar cells
(of metal chalcogenide produced by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT Carboxylic acids, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(salts, Group IIIA and Group IVA; synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT Group IIIA element oxides
Group IVA element oxides
Transition metal halides
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT Carboxylic acids, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(transition metal salts; synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT 7704-34-9, Sulfur, processes 7782-49-2, Selenium, processes 13494-80-9, Tellurium, processes 20612-73-1 39181-26-5
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(chalcogenic precursor; synthesis of metal chalcogenide nanocrystals by combining metal oxides or metal salts with ligand and/or with coordinating solvent)

IT 814-29-9, Tributylphosphine oxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(coordinating solvent; synthesis of metal chalcogenide

nanocrystals by combining metal oxides or
metal salts with ligand and/or with coordinating solvent)
IT 57-11-4, Stearic acid, processes 78-50-2, Trioctylphosphine oxide
124-22-1, Dodecylamine 124-30-1, Octadecylamine 143-07-7, Lauric acid,
processes 143-27-1, Hexadecylamine 4671-75-4, Tetradecylphosphonic
acid 4721-24-8, Hexylphosphonic acid
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(ligand and coordinating solvent; synthesis of metal chalcogenide
nanocrystals by combining metal oxides or
metal salts with ligand and/or with coordinating solvent)
IT 1306-24-7, Cadmium selenide (CdSe), processes
RL: CAT (Catalyst use); CPS (Chemical process); DEV (Device component
use); PEP (Physical, engineering or chemical process); PROC (Process);
USES (Uses)
(nanocrystals; synthesis of metal chalcogenide
nanocrystals by combining metal oxides or
metal salts with ligand and/or with coordinating solvent)
IT 1306-23-6, Cadmium sulfide (CdS), processes 1306-25-8, Cadmium telluride
(CdTe), processes 1315-09-9, Zinc selenide (ZnSe) 22398-80-7, Indium
phosphide (InP), processes
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)
(nanocrystals; synthesis of metal chalcogenide
nanocrystals by combining metal oxides or
metal salts with ligand and/or with coordinating solvent)
IT 513-78-0, Cadmium carbonate 543-90-8, Cadmium acetate 557-34-6, Zinc
acetate 1306-19-0, Cadmium oxide (cdo), processes
1314-13-2, Zinc oxide (ZnO), processes 10108-64-2, Cadmium
chloride 20661-21-6, Indium hydroxide (In(OH)3) 209518-32-1
410975-47-2
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(synthesis of metal chalcogenide nanocrystals by combining
metal oxides or metal salts with ligand and/or with
coordinating solvent)
IT 1306-19-0, Cadmium oxide (cdo), processes 1314-13-2,
Zinc oxide (ZnO), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(synthesis of metal chalcogenide nanocrystals by combining
metal oxides or metal salts with ligand and/or with
coordinating solvent)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 7 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2001:707289 HCAPLUS Full-text
DN 135:258702
TI Titania coating solutions, their manufacture, the transparent titania
films and their formation
IN Kondo, Osamu; Fukui, Toshimi; Doi, Motoyuki
PA Mitsubishi Gas Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI JP 2001262008 A 20010926 JP 2000-76635 20000317 <--
PRAI JP 2000-76635 20000317 <--
AB Title solns., with a water content of ≤5%, contain anatase TiO2 with crystalline diameter of ≤20 nm and are prepared by hydrolysis Ti alkoxides in alkoxyalcs. containing 1-10 mol (based on 1 mol Ti) water into non-crystalline TiO2 sols and hydrothermal reaction-like heating in a closed system at 100-100°. Hydrolyzing Ti(OPr)4 in 10% H2O (at H2O/Ti 4:1 mol) -containing 2-propanol Me ether at room temperature and refluxing at 150° for 24 h gave a solution containing 2.0% H2O and 9.7-nm crystalline TiO2, which was mixed spin coated on various glass plates and a polycarbonate plate and baked at 110° for 10 min to form films transparency 94-96% and high photocatalytic ability.
IC ICM C09D0001-00
ICS A01N0059-16; B01D0053-86; B01J0021-06; B01J0035-02; B05D0003-02; C01G0023-053
CC 42-13 (Coatings, Inks, and Related Products)
Section cross-reference(s): 57
ST photocatalyst cryst titania manuf hydrolysis refluxing; transparency titania photocatalytic coating film
IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(ether, in hydrolysis; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Carboxylic acids, uses
RL: CAT (Catalyst use); USES (Uses)
(in hot water refluxing; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Acids, uses
RL: CAT (Catalyst use); USES (Uses)
(inorg., in hot water refluxing; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Glass substrates
Hydrolysis
(manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Separation
(reflux; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Borosilicate glasses
High-silica glasses
Polycarbonates, miscellaneous
Polyesters, miscellaneous
RL: MSC (Miscellaneous)
(substrates; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Coating materials
(transparent; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 13463-67-7P, Titania, uses
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anatase; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)

IT 64-19-7, Acetic acid, uses 1336-21-6, Ammonia water 7697-37-2, Nitric acid, uses
RL: CAT (Catalyst use); USES (Uses)
(in hot water refluxing; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 109-86-4, Methoxy Ethanol 110-80-5 1589-47-5, Methoxy 2-Propanol
RL: NUU (Other use, unclassified); USES (Uses)
(in hydrolysis; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 3087-37-4, Titanium tetrapropoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 25038-59-9, PET polymer, miscellaneous
RL: MSC (Miscellaneous)
(substrates; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 13463-67-7P, Titania, uses
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anatase; manufacture of crystalline TiO2-containing coatings by hydrolysis in alkoxyalcs. and refluxing for formation of transparent film with adhesion to (in)organic substrates)

L43 ANSWER 8 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2001:704859 HCAPLUS Full-text
DN 135:258701
TI Titania coating solutions, their manufacture, the transparent titania films and their formation
IN Kondo, Osamu; Fukui, Toshimi; Doi, Motoyuki
PA Mitsubishi Gas Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001262007	A	20010926	JP 2000-76634	20000317 <--
PRAI	JP 2000-76634		20000317 <--		

AB Title solns., with a pH of 1-9, contain anatase TiO2 with crystalline diameter of ≤20 nm and are prepared by hydrolysis Ti alkoxides into non- crystalline TiO2 sols and hydrothermal reaction-like heating in the presence of water at total water content (Wt; including water used in hydrolysis) of 10-200 mol of 1 mol Ti at 50-100°. Hydrolyzing Ti(OPr)4 in iso-PrOH/H2O mixture at room temperature and refluxing in the presence of HNO3 and H2O with Wt of 100 mol at 90° for 24 h gave a solution with pH 1.25 containing 5.8-nm crystalline TiO2, which was mixed with polyoxyehtylene alkylphenyl ether and spin coated on various glass plates and a polycarbonate plate and baked at 110° for 10 min to form films transparency 94-96% and high photocatalytic ability.
IC ICM C09D0001-00
ICS A01N0059-16; B01D0053-86; B01J0021-06; B01J0035-02; C01G0023-053
CC 42-13 (Coatings, Inks, and Related Products)
Section cross-reference(s): 57
ST photocatalyst cryst titania manuf hydrolysis refluxing;

transparency titania photocatalytic coating film
IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(alkylphenyl ethers, film-forming agent; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Carboxylic acids, uses
RL: CAT (Catalyst use); USES (Uses)
(in hot water refluxing; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in hydrolysis; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Acids, uses
RL: CAT (Catalyst use); USES (Uses)
(inorg., in hot water refluxing; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Glass substrates
Hydrolysis
(manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Separation
(reflux; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Borosilicate glasses
High-silica glasses
Polycarbonates, miscellaneous
Polyesters, miscellaneous
RL: MSC (Miscellaneous)
(substrates; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT Coating materials
(transparent; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 13463-67-7P, Titania, uses
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anatase; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 25322-68-3D, alkylphenyl ethers
RL: MOA (Modifier or additive use); USES (Uses)
(film-forming agent; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 64-19-7, Acetic acid, uses 1336-21-6, Ammonia water 7647-01-0, Hydrochloric acid, uses 7697-37-2, Nitric acid, uses
RL: CAT (Catalyst use); USES (Uses)
(in hot water refluxing; manufacture of crystalline TiO2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)
IT 64-17-5, Ethanol, uses 67-63-0, 2-Propanol, uses

RL: NUU (Other use, unclassified); USES (Uses)
(in hydrolysis; manufacture of crystalline TiO_2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)

IT 546-68-9, Titanium tetraisopropoxide 3087-37-4, Titanium tetrapropoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(manufacture of crystalline TiO_2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)

IT 25038-59-9, PET polymer, miscellaneous
RL: MSC (Miscellaneous)
(substrates; manufacture of crystalline TiO_2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)

IT 13463-67-7P, Titania, uses
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anatase; manufacture of crystalline TiO_2-containing coatings by hydrolysis and refluxing for formation of transparent film with adhesion to (in)organic substrates)

L43 ANSWER 9 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2001:552779 HCAPLUS Full-text
DN 135:124518
TI Titanium oxide sol and manufacture of same.
IN Izutsu, Hiroyuki; Yamamoto, Shin
PA Taki Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001206720	A	20010731	JP 2000-16417	20000126 <--
	JP 3515034	B2	20040405		
PRAI	JP 2000-16417		20000126 <--		

AB The Ti oxide sol is anatase-type crystalline Ti oxide sol dispersed and stabilized by ≥ 1 acids selected from hydroxycarboxylic acids; and it is characterized by having elec. conductivity ≤ 5 mS/cm while Ti oxide concentration is 5 weight% (as TiO_2). The hydroxycarboxylic acids are lactic acid, citric acid, glycolic acid, malic acid, tartaric acid, and/or mandelic acid. The manufacture process includes reacting a water-soluble Ti compound (e.g., $TiCl_4$) with an ammonia compound (e.g., NH_4OH) to form gel, then hydrothermal treating, and adding hydroxycarboxylic acids and further hydrothermal treating.

IC ICM C01G0023-053
ICS C09C0001-36
CC 49-3 (Industrial Inorganic Chemicals)
ST titanium oxide sol manuf hydrothermal reaction; elec cond titanium oxide sol manuf; hydroxycarboxylic acid stabilization titanium oxide sol

IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(hydroxy; titanium oxide sol and manufacture of same)

IT Electric conductivity
Hydrothermal reactions
(titanium oxide sol and manufacture of same)

IT Sols

(titanium oxide; titanium oxide sol and manufacture of same)
IT 1317-70-0P, Anatase 13463-67-7P, Titanium oxide, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(sol; titanium oxide sol and manufacture of same)
IT 50-21-5, Lactic acid, uses 77-92-9, Citric acid, uses 79-14-1, Glycolic acid, uses 87-69-4, Tartaric acid, uses 90-64-2, Mandelic acid 6915-15-7, Malic acid
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(titanium oxide sol and manufacture of same)
IT 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7550-45-0, Titanium chloride (TiCl4), reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(titanium oxide sol and manufacture of same)
IT 1317-70-0P, Anatase 13463-67-7P, Titanium oxide, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(sol; titanium oxide sol and manufacture of same)

L43 ANSWER 10 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2001:319828 HCAPLUS Full-text
DN 134:342115
TI Method of preparation of zirconia sols
IN Kolb, Brant U.; Chien, Bert T.
PA 3M Innovative Properties Company, USA
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001030702	A1	20010503	WO 2000-US8796	20000403 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 20020004544	A1	20020110	US 1999-428374	19991028 <--
	US 6376590	B2	20020423		
	CA 2388876	A1	20010503	CA 2000-2388876	20000403 <--
	AU 2000040652	A	20010508	AU 2000-40652	20000403 <--
	EP 1232118	A1	20020821	EP 2000-920055	20000403 <--
	EP 1232118	B1	20051005		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	JP 2003512287	T	20030402	JP 2001-533062	20000403 <--
PRAI	US 1999-428374	A	19991028 <--		
	WO 2000-US8796	W	20000403 <--		

AB A zirconia sol comprises an aqueous phase having dispersed therein a plurality of single crystal zirconia particles having an average primary particle size less than about 20 nm. The zirconia sols are substantially nonassocd. having a dispersion index ranging from about 1-3 and are highly crystalline exhibiting a crystallinity index of about 0.65 or greater. Of the crystalline phase, about 70 or greater exists in combined cubic and tetragonal crystal lattice structures without a crystal phase stabilizer. Also described is a

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     hydrothermal method of making zirconia sols having substantially nonassocd.
     zirconia particles and composite materials made from the zirconia sols.
IC   ICM  C01G0025-02
     ICS  B01J0013-00; C08K0003-00; C08K0007-18; C08K0007-00; C08K0009-04
CC   49-3 (Industrial Inorganic Chemicals)
     Section cross-reference(s): 57, 73
ST   zirconia sol prepn; composite zirconia sol prepn
IT   Polyethers, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (carboxylic acid; method of preparation of zirconia sols)
IT   Composites
       Crystallinity
     Dispersion (of materials)
     Hydrothermal reactions
     Optical refraction
     Optical transmission
     Particle size
       Sols
        (method of preparation of zirconia sols)
IT   Polyesters, uses
     Polyurethanes, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (method of preparation of zirconia sols)
IT   Epoxy resins, uses
     Polycarbonates, uses
     Polyimides, uses
     Polyolefins
     RL: TEM (Technical or engineered material use); USES (Uses)
        (organic matrix; method of preparation of zirconia sols)
IT   Carboxylic acids, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (polyether; method of preparation of zirconia sols)
IT   7585-20-8, Zirconium acetate 7699-43-6, Zirconyl chloride
     13826-66-9, Zirconyl nitrate   30937-72-5, Formic acid, zirconium salt
     34842-61-0, Zirconyl carbonate   84057-80-7, Propanoic acid, zirconium
     salt   85226-98-8
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (method of preparation of zirconia sols)
IT   1314-23-4P, Zirconia, preparation
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (method of preparation of zirconia sols)
IT   16024-56-9, 2-(2-Methoxyethoxy)acetic acid   16024-58-1   337467-29-5
     RL: TEM (Technical or engineered material use); USES (Uses)
        (method of preparation of zirconia sols)
IT   9003-53-6, Polystyrene   9011-14-7, Pmma
     RL: TEM (Technical or engineered material use); USES (Uses)
        (organic matrix; method of preparation of zirconia sols)
IT   7631-86-9, Nalco 2329, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (surface modified; method of preparation of zirconia sols)
IT   7699-43-6, Zirconyl chloride
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (method of preparation of zirconia sols)
IT   1314-23-4P, Zirconia, preparation
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (method of preparation of zirconia sols)
IT   7631-86-9, Nalco 2329, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (surface modified; method of preparation of zirconia sols)
RE.CNT  5     THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
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ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 11 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2000:822586 HCAPLUS Full-text
DN 134:6604
TI Preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids
IN Roth, Marcel; Hempelmann, Rolf
PA Henkel KGaA, Germany
SO Ger. Offen., 8 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 19923625	A1	20001123	DE 1999-19923625	19990522 <--
	WO 2000071465	A1	20001130	WO 2000-EP4326	20000513 <--

W: JP, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRAI DE 1999-19923625 A 19990522 <--

AB Redispersible nanocryst. metal hydroxides and metal oxides, with crystallite size 1-20 nm, are prepared by controlled precipitation from aqueous solns. of metal salts by increasing the pH with added base in the presence of a polycarboxylic acid. Following precipitation, a portion of the aqueous phase is separated and removed. Soluble salts are then separated from the aqueous phase by dialysis, and the aqueous phase is evaporated to remove some of the liquid Finally, the aqueous phase is acidified until the metal oxide or hydroxides precipitate as flocculates, and are separated from the aqueous phase. The polycarboxylic acids are selected from copolymers and homopolymers of acrylic acid, methacrylic acid, maleic acid, and poly(L-aspartic acid), with average mol. weight of 500-10,000. The process is especially useful for preparing suspensions of nanocryst. magnetic metal oxides, especially for preparing ferrofluids.,.

IC ICM C01G0001-02
ICS H01F0001-44
CC 49-4 (Industrial Inorganic Chemicals)
ST nanoparticle redispersible metal oxide; ferrofluid
nanoparticle redispersible metal oxide; pptn
nanoparticle redispersible metal oxide
IT Oxides (inorganic), preparation
RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nanoparticles; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)
IT Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(polycarboxylic, dispersant; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)
IT Ferrofluids
Magnetic particles
Nanoparticles
(preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)
IT 9003-01-4, Polyacrylic acid 25087-26-7, Polymethacrylic acid

25608-40-6, Poly(L-aspartic acid) 26063-13-8, Poly(L-aspartic acid)
26099-09-2, Poly(maleic acid)
RL: NUU (Other use, unclassified); USES (Uses)
(dispersant; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)

IT 1309-37-1P, Iron oxide (Fe_2O_3), preparation 1317-61-9P, Iron oxide (Fe_3O_4), preparation 12052-28-7P, Cobalt iron oxide ($CoFe_2O_4$) 12063-10-4P, Iron manganese oxide (Fe_2MnO_4)
RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nanoparticles; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)

IT 124-38-9, Carbon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(precipitating agent; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)

IT 1309-37-1P, Iron oxide (Fe_2O_3), preparation 1317-61-9P, Iron oxide (Fe_3O_4), preparation 12052-28-7P, Cobalt iron oxide ($CoFe_2O_4$) 12063-10-4P, Iron manganese oxide (Fe_2MnO_4)
RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nanoparticles; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)

IT 124-38-9, Carbon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(precipitating agent; preparation of redispersible nanoparticle-sized metal oxides and metal hydroxides for use as magnetic suspensions and ferrofluids)

L43 ANSWER 12 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2000:467818 HCAPLUS Full-text
DN 133:81845
TI Method of producing solution-derived metal oxide thin films
IN Boyle, Timothy J.; Ingersoll, David
PA Sandia Corporation, USA
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6086957	A	20000711	US 1999-321911	19990528 <--
PRAI	US 1999-321911		19990528 <--		

AB A method of preparing metal oxide thin films by a solution method. A β-metal β-diketonate or carboxylate compound, where the metal is selected from Groups 8, 9, 10, 11, and 12 of the Periodic Table, is solubilized in a strong Lewis base to form a homogeneous solution This precursor solution forms within minutes and can be deposited on a substrate in a single layer or a multiple layers to form a metal oxide thin film. The substrate with the deposited thin film is heated to change the film from an amorphous phase to a ceramic metal oxide and cooled.

IC ICM B05D0003-02
ICS B05D0001-18; B05D0003-12; B05D0001-38
INCL 427376200

CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 67, 76
ST metal oxide soln coating film; carboxylate metal soln film; diketonate metal soln film; ruthenium oxide soln film
IT Films
(amorphous; method of producing solution-derived metal oxide thin films)
IT Group IB element compounds
Group IIB element compounds
Group VIII element compounds
RL: NUU (Other use, unclassified); USES (Uses)
(carboxylates or diketonates; method of producing solution-derived metal oxide thin films)
IT Films
Films
(ceramic; method of producing solution-derived metal oxide thin films)
IT Ketones, uses
RL: NUU (Other use, unclassified); USES (Uses)
(diketones, metal complexes; method of producing solution-derived metal oxide thin films)
IT Ceramics
Ceramics
(films; method of producing solution-derived metal oxide thin films)
IT Coating process
Crystallization
Films
MOS capacitors
Solutions
(method of producing solution-derived metal oxide thin films)
IT Lewis bases
RL: NUU (Other use, unclassified); USES (Uses)
(method of producing solution-derived metal oxide thin films)
IT Oxides (inorganic), processes
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(method of producing solution-derived metal oxide thin films)
IT Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(salts, metal; method of producing solution-derived metal oxide thin films)
IT Amines, uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; method of producing solution-derived metal oxide thin films)
IT Coating process
(spin; method of producing solution-derived metal oxide thin films)
IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method of producing solution-derived metal oxide thin films)
IT 64-19-7, Acetic acid, uses 108-88-3, Toluene, uses 110-86-1, Pyridine, uses 123-54-6D, Acetylacetone, metal complexes 7440-18-8D, Ruthenium,

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     carboxylates and diketonates, uses   7664-38-2, Phosphoric acid, uses
     7697-37-2, Nitric acid, uses   12193-47-4, Strontium acetylacetonate, uses
     13395-16-9, Copper bis(acetylacetonate)   14024-17-0, Iron
     bis(acetylacetonate)   14024-63-6, Zinc bis(acetylacetonate)   14284-93-6,
     Ruthenium tris(acetylacetonate)   15635-87-7, Iridium
     tris(acetylacetonate)   69047-66-1, Rhodium bis(acetylacetonate)
     RL: NUU (Other use, unclassified); USES (Uses)
        (method of producing solution-derived metal oxide thin
        films)
IT   1314-11-0P, Strontium oxide, preparation 1314-13-2P,
     Zinc oxide, preparation 1332-37-2P, Iron oxide, preparation
     1344-70-3P, Copper oxide 11113-84-1P, Ruthenium oxide
     12645-46-4P, Iridium oxide 12680-36-3P, Rhodium oxide
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (method of producing solution-derived metal oxide thin
        films)
IT   68-12-2, DMF, uses   109-89-7, Diethylamine, uses   616-47-7,
     1-Methylimidazole
     RL: NUU (Other use, unclassified); USES (Uses)
        (solvent; method of producing solution-derived metal
        oxide thin films)
IT   7440-06-4, Platinum, processes   7440-21-3, Silicon, processes
     7440-32-6, Titanium, processes   7440-57-5, Gold, processes
     RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
     process); PROC (Process); USES (Uses)
        (substrate; method of producing solution-derived metal
        oxide thin films)
IT   7631-86-9, Silica, processes
     RL: DEV (Device component use); PEP (Physical, engineering or chemical
     process); PROC (Process); USES (Uses)
        (method of producing solution-derived metal oxide thin
        films)
IT   1314-11-0P, Strontium oxide, preparation 1314-13-2P,
     Zinc oxide, preparation 1332-37-2P, Iron oxide, preparation
     1344-70-3P, Copper oxide 11113-84-1P, Ruthenium oxide
     12645-46-4P, Iridium oxide 12680-36-3P, Rhodium oxide
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material
     use); PREP (Preparation); USES (Uses)
        (method of producing solution-derived metal oxide thin
        films)
RE.CNT  8     THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43  ANSWER 13 OF 22  HCAPLUS  COPYRIGHT 2009 ACS on STN
AN   2000:227359  HCAPLUS  Full-text
DN   132:253166
TI   Spinel powder and spinel slurry suitable for catalyst support
     production for NOx reduction catalysts
IN   Yamamoto, Toshio; Suda, Akihiko; Sugiura, Masahiro
PA   Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan
SO   Eur. Pat. Appl., 26 pp.
     CODEN: EPXXDW
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   EP 990621            A2    20000405   EP 1999-119363         19990929 <--
     EP 990621            A3    20000628
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    R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
        IE, SI, LT, LV, FI, RO
JP 2000103616        A     20000411   JP 1998-278650         19980930 <--
JP 2000128527        A     20000509   JP 1998-301891         19981023 <--
JP 3666555           B2    20050629
JP 2001048529        A     20010220   JP 1999-220595         19990804 <--
US 6306360           B1    20011023   US 1999-407763         19990929 <--
PRAI JP 1998-278650       A     19980930  <--
     JP 1998-301891       A     19981023  <--
     JP 1999-220595       A     19990804  <--
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AB MgAl2O4 spinel powder, synthesized by copptn. using Mg(OH)2 and Al(OH)3, followed by calcination, with sp. surface area ≥40 m2/g, average diameter 3-20 μm and uniform pores, is used to prepare a slurry by milling. The spinel powder is synthesized by copptn. using hydroxide materials having a ratio of the average diameter of Al(OH)3 "D1" to the average diameter of Mg(OH)2 "D2" of (D1/D2)≥1.85 or (D1/D2)<0.5. The spinel powder can be obtained by drying the mixture solution containing a water-soluble organic substance (b.p. ≥120°C) and converting the dried substance into a complex oxide by heating. Alternately, the spinel powder can be obtained by mixing and milling a mixture of hydroxides for conversion into a complex hydroxide, where the mixture containing the complex hydroxide and an unconverted hydroxide is heated. The spinel slurry can be used to produce stable catalyst supports for NOx reduction catalysts.

IC ICM C01F0007-16
ICS B01J0023-00; B01J0021-00

CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 59, 67

ST magnesium aluminate spinel powder slurry; NOx redn catalyst magnesium aluminate support; nitrogen oxide redn magnesium aluminate catalyst

IT Carboxylic acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polycarboxylic; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polyhydric; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)

IT Catalyst supports
Powders
Reduction catalysts
Slurries
Spinel-type crystals
Surfactants
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)

IT Alcohols, processes
Carbohydrates, processes
Carboxylic acids, processes
Disaccharides
Monosaccharides
Polymers, processes
Polyoxyalkylenes, processes
Polysaccharides, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(spinel powder and slurry suitable for catalyst support for

NOx reduction catalyst)
IT 1309-42-8, SP
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(MS 4; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 1314-23-4, Zirconia, uses
RL: CAT (Catalyst use); USES (Uses)
(binders, catalysts; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 1344-28-1, Alumina, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst supports; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 7440-06-4, Platinum, uses 7440-09-7, Potassium, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 7778-49-6, Potassium citrate 160791-03-7, Nitric acid, platinum salt
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(catalysts; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 12068-51-8P, Aluminum magnesium oxide (Al2MgO4)
RL: CAT (Catalyst use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 75492-73-8 139902-00-4, Aluminum magnesium hydroxide (Al2Mg4(OH)14), trihydrate 263006-03-7
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 64-19-7, Acetic acid, processes 111-46-6, processes 7697-37-2, Nitric acid, processes 7779-25-1, Magnesium citrate 9002-89-5, Polyvinyl alcohol 9003-01-4, Polyacrylic acid 9004-34-6, Cellulose, processes 10377-60-3, Magnesium nitrate 13473-90-0, Aluminum nitrate 21645-51-2, Aluminum hydroxide (Al(OH)3), processes 25322-68-3 31142-56-0, Aluminum citrate
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 10102-43-9, Nitric oxide, processes 11104-93-1, Nitrogen oxide, processes
RL: POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 1314-23-4, Zirconia, uses
RL: CAT (Catalyst use); USES (Uses)
(binders, catalysts; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 1344-28-1, Alumina, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst supports; spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)
IT 12068-51-8P, Aluminum magnesium oxide (Al2MgO4)

RL: CAT (Catalyst use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)

IT 21645-51-2, Aluminum hydroxide (Al(OH)3), processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)

IT 11104-93-1, Nitrogen oxide, processes
RL: POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)
(spinel powder and slurry suitable for catalyst support for NOx reduction catalyst)

L43 ANSWER 14 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1998:709008 HCAPLUS Full-text
DN 129:332184
OREF 129:67720h,67721a
TI Production of powder minerals surface coated with fine titanium dioxide crystals
IN Yaniv, Isaac
PA Baran Advanced Materials (94) Ltd., Israel; Friedman, Mark M.
SO PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9847817	A1	19981029	WO 1998-US7210	19980413 <--

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	AU 9868966	A	19981113	AU 1998-68966	19980413 <--
PRAI	US 1997-844517	A	19970418 <--		
	WO 1998-US7210	W	19980413 <--		

OS MARPAT 129:332184
AB TiO2 pigments with lower concns. of TiO2, useful for paints, are manufactured by coating a water insol. or sparingly water soluble natural and artificial mineral (carrier) powder with fine TiO2 crystals. A slurry is created by milling/mixing TiO2 powder, water and a dispersant selected from among low (<150) mol. weight monocarboxylic acids and their anhydrides. The carrier powder is mixed with the titanium dioxide slurry to produce a coated powder.
IC ICM C01G0023-047
CC 42-6 (Coatings, Inks, and Related Products)
IT Dispersing agents
(carboxylic acids; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)
IT Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(dispersants; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)
IT Minerals, uses

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(hydrotalcite-group; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT Pigments, nonbiological
(production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT Oxides (inorganic), uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT Paints
(production of powder minerals surface coated with fine titanium dioxide crystals for pigments for paints)

IT 21645-51-2, Aluminum hydroxide, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(ATH-X; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Kronos 2160; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 79-09-4, Propionic acid, uses 79-10-7, Acrylic acid, uses 107-92-6, Butanoic acid, uses 625-45-6, Methoxyacetic acid
RL: NUU (Other use, unclassified); USES (Uses)
(dispersant; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 79-10-7D, Acrylic acid, esters, polymers with vinyl acetate 108-05-4D, Vinyl acetate, polymers with acrylates
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(paints; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 471-34-1, Calcium carbonate, uses 546-93-0, Magnesium carbonate 1305-62-0, Calcium hydroxide, uses 1309-42-8, Magnesium hydroxide 1309-48-4, Magnesium oxide, uses 1318-74-7, Kaolinite, uses 1344-28-1, Alumina, uses 7000-29-5, Calcium magnesium carbonate 7631-86-9, Silica, uses 7727-43-7, Barium sulfate 7778-18-9, Calcium sulfate 12347-21-6 12363-58-5 14807-96-6, Talc, uses 24623-77-6, Aluminum oxide hydroxide
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 21645-51-2, Aluminum hydroxide, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(ATH-X; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 13463-67-7, Titania, uses

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Kronos 2160; production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

IT 1309-48-4, Magnesium oxide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 24623-77-6, Aluminum oxide hydroxide
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(production of powder minerals surface coated with fine titanium dioxide crystals for pigments)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L43 ANSWER 15 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1996:710537 HCAPLUS Full-text
DN 125:336967
OREF 125:62855a,62858a
TI Manufacture of weakly agglomerated, high-density and/or crystalline nanoparticles, and the particles obtained and their use
IN Burgard, Detlef; Nass, Ruediger; Schmidt, Helmut
PA Institut fuer Neue Materialien Gemeinnuetzige Gmbh Universitaet des Saarlandes, Germany
SO Ger. Offen., 7 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	----------------	----	--------	--------------------	--------
PI	DE 19515820	A1	19961031	DE 1995-19515820	19950429 <--
	WO 9634829	A1	19961107	WO 1996-EP1756	19960426 <--
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 823885	A1	19980218	EP 1996-914135	19960426 <--
	EP 823885	B1	20020130		
	R: BE, DE, FR, GB, NL, SE				
	JP 11504311	T	19990420	JP 1996-532983	19960426 <--
	JP 4129564	B2	20080806		
	US 5935275	A	19990810	US 1997-945411	19971029 <--
PRAI	DE 1995-19515820	A	19950429 <--		
	WO 1996-EP1756	W	19960426 <--		

AB The process comprises preparing a suspension of nanoparticles from suitable precursors, in a solvent in which the nanoparticles are insol. or not readily soluble, and in the presence of a surface-blocking agent. The nanoparticles are used for manufacturing ceramic articles, coatings, films, and composites, especially films having thickness ≤20 μm, by slip-casting process. A solution of 12.4 g Y(NO3)3.4H2O and 255 g Zr(n-OPr)4 in 64 mL EtOH was dropwise added to 320 mL NH4OH solution (pH 12) containing 2.1 g (each) of Emulsogen OG (fatty acid polyglycol ester) and Tween 80 (sorbitan, mono-9-octadecenoate, poly(oxy-1,2-ethanediyl) derivs., (Z)-). The resulting suspension was hydrothermally aged at 250° and 70 bar for 3 h, and the solvent removed by distillation The resulting agglomerate-free ZrO2 nanoparticles stabilized with 8 mol Y2O3 had average particle size 7 nm.

IC ICM C04B0035-622
ICS B01J0002-00
CC 57-2 (Ceramics)

ST yttria stabilizer zirconia nanoparticle; yttrium nitrate zirconium propylate nanoparticle; ammonium hydroxide surfactant nanoparticle; hydrothermal crystn nanoparticle; Emulsogen OG Tween 80 surfactant; ceramic powder nanoparticle

IT Glycols, uses
Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(nonsolvents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Amines, processes
Quaternary ammonium compounds, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(pH-control agents; weakly agglomerated, high-d. and/or cryst. nanoparticle manufacture for slip casting ceramic films)

IT Nitrates, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(precursors for ceramics and glass; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Amino acids, uses
Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(surface-blocking agents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Ceramic materials and wares
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Hydroxides
Oxides, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Phosphides
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Selenides
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Sulfides, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Tellurides
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Carboxylic acids, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(C1-3, salts, precursors for ceramics and glass; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(C1-3, solvents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Ion exchangers
(acidic, pH-control agents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Amines, uses

RL: NUU (Other use, unclassified); USES (Uses)
(alicyclic, nonsolvents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Fatty acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(alkoxylated, surfactants; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Amines, uses
RL: NUU (Other use, unclassified); USES (Uses)
(aryl, nonsolvents; weakly agglomerated, high-d. and/or cryst. nanoparticle manufacture for slip casting ceramic films)

IT Ion exchangers
(basic, pH-control agents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Carbonyl compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(di-, β-, surface-blocking agents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Ceramic materials and wares
(films, weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Amines, uses
RL: NUU (Other use, unclassified); USES (Uses)
(halo, nonsolvents; weakly agglomerated, high-d. and/or cryst. nanoparticle manufacture for slip casting ceramic films)

IT Aging
(hydrothermal, weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(long-chain, surface-blocking agents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(mono(fatty acyl)-terminated, surfactants; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Particles
(nano-, weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Surfactants
(nonionic, weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Ceramic materials and wares
(powdered, weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT Molding
(slip-casting, weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT 1336-21-6, Ammonium hydroxide 7697-37-2, Nitric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(pH-control agent; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

IT 7429-90-5D, Aluminum, compds. 7439-89-6D, Iron, compds. 7439-92-1D, Lead, compds. 7440-18-8D, Ruthenium, compds. 7440-20-2D, Scandium, compds. 7440-32-6D, Titanium, compds. 7440-39-3D, Barium, compds. 7440-65-5D, Yttrium, compds. 7440-66-6D, Zinc, compds. 7440-67-7D, Zirconium, compds.

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(precursors for ceramics and glass; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 64-17-5, Ethanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 9002-89-5, Poly(vinyl alcohol)
RL: NUU (Other use, unclassified); USES (Uses)
(surface-blocking agent; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 9004-34-6D, Cellulose, derivs.
RL: NUU (Other use, unclassified); USES (Uses)
(surface-blocking agents; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 9005-65-6, Tween 80
RL: NUU (Other use, unclassified); USES (Uses)
(surfactant, admixts. with Emulsogen OG; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 29063-28-3, Octanol 109190-38-7, Emulsogen OG
RL: NUU (Other use, unclassified); USES (Uses)
(surfactant, admixts. with Tween 80; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 12441-09-7D, Sorbitan, fatty acid esters 12441-09-7D, Sorbitan, fatty acid esters, ethoxylated
RL: NUU (Other use, unclassified); USES (Uses)
(surfactants; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 64417-98-7P, Yttrium zirconium oxide 111569-09-6P, Scandium zirconium oxide
RL: IMF (Industrial manufacture); PREP (Preparation)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 10361-93-0, Yttrium nitrate 13465-60-6, Scandium nitrate 13473-90-0, Aluminum nitrate 23519-77-9, Zirconium tetrapropoxide
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 1344-28-1P, Alumina, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(α-; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 64417-98-7P, Yttrium zirconium oxide
RL: IMF (Industrial manufacture); PREP (Preparation)
(weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)
IT 1344-28-1P, Alumina, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(α-; weakly agglomerated, high-d. and/or crystalline nanoparticle manufacture for slip casting ceramic films)

L43 ANSWER 16 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1996:313930 HCAPLUS Full-text
DN 124:347454
OREF 124:64452h,64453a
TI Sol-gel process for manufacturing octahedral manganese oxide
IN o'Young, Chi-Lin; Duan, Niangao; Suib, Steven L.
PA Texaco Development Corporation, USA

SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	EP 710624	A1	19960508	EP 1995-307949	19951107	<--
	R: DE, FR, GB, NL					
	CA 2160409	A1	19960508	CA 1995-2160409	19951012	<--
	JP 08208232	A	19960813	JP 1995-288375	19951107	<--
PRAI	US 1994-335323	A	19941107	<--		

AB The process comprises forming a solution containing permanganate anions, adding an organic reducing agent to the solution to form a gel, recovering the gel, and heating the gel at a temperature effective to produce the Mn oxide. Materials produced by this method include layered materials suitable for use as precursors in the formation of other Mn oxide products and mol. sieves, which, due to their high thermal stability, are suitable for use in high-temperature catalytic applications. A solution of 5.0 g glucose in 20 mL distilled deionized water was mixed with a solution of 3.0 g $KMnO_4$ in 50 mL distilled deionized water to give a red sol that turned into a brown gel which was cooled at room temperature, dried at 110° for 24 h, and calcined at 450° for 2 h to give a black powder having x-ray diffraction pattern as presented.
IC ICM C01B0039-00
ICS C01G0045-02
CC 49-3 (Industrial Inorganic Chemicals)
ST alc permanganate octagonal manganese oxide; glucose potassium permanganate oxide; mol structure octagonal layered oxide; sieve mol layered manganese oxide; maleic acid potassium permanganate oxide; sol gel octagonal manganese oxide
IT Molecular sieves
(alkali metal, alkaline earth, and transition metal cation-substituted; sol-gel process for manufacturing octahedral manganese oxide)
IT Reducing agents
(organic; sol-gel process for manufacturing octahedral manganese oxide by reaction with permanganate)
IT Alcohols, processes
Carboxylic acids, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(sol-gel process for manufacturing octahedral manganese oxide by reaction with permanganate)
IT Crystal structure types
(layered, sol-gel process for manufacturing octahedral manganese oxide)
IT Molecular structure
(octahedral, manganese oxide; sol-gel process for manufacture of)
IT 11129-60-5P, Manganese oxide
RL: IMF (Industrial manufacture); PREP (Preparation)
(octahedral; sol-gel process for manufacture of)
IT 7722-64-7, Potassium permanganate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(sol-gel process for manufacturing octahedral manganese oxide by reaction with organic reducing agent)
IT 50-99-7, Glucose, processes 57-50-1, Sucrose, processes 88-99-3, Phthalic acid, processes 110-16-7, Maleic acid, processes 110-17-8, Fumaric acid, processes 110-94-1, Glutaric acid
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(sol-gel process for manufacturing octahedral manganese oxide by reaction with permanganate)
IT 11129-60-5P, Manganese oxide

```
     RL: IMF (Industrial manufacture); PREP (Preparation)
        (octahedral; sol-gel process for manufacture of)

L43  ANSWER 17 OF 22  HCAPLUS  COPYRIGHT 2009 ACS on STN
AN   1996:172153  HCAPLUS  Full-text
DN   125:46638
OREF 125:8727a,8730a
TI   Aqueous silver composition
IN   Hochheimer, John T.; Steinberg, Jerry I.; Skrzat, Michael S.
PA   Heraeus Inc., USA
SO   U.S., 8 pp.
     CODEN: USXXAM
DT   Patent
LA   English
FAN.CNT 3
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   US 5492653           A     19960220   US 1994-335146         19941107 <--
     US 5658499           A     19970819   US 1995-544038         19951017 <--
     KR 174305            B1    19990320   KR 1995-39220          19951101 <--
     EP 713930            A1    19960529   EP 1995-117196         19951102 <--
     EP 713930            B1    19980408
         R:  AT, BE, DE, ES, FR, GB, IT, NL, SE
     AT 164892            T     19980415   AT 1995-117196         19951102 <--
     ES 2115306           T3    19980616   ES 1995-117196         19951102 <--
     JP 09077949          A     19970325   JP 1995-311514         19951106 <--
     FI 9505353           A     19960508   FI 1995-5353           19951107 <--
     FI 114923            B1    20050131
     CN 1134962           A     19961106   CN 1995-121553         19951107 <--
     CN 1058741           C     20001122
     HK 1001465           A1    20000901   HK 1998-100441         19980119 <--
PRAI US 1994-335146       A2    19941107  <--
     US 1994-544038       A     19941107  <--
AB    Coating compns. of silver flake suspended in predominantly aqueous vehicle is
      disclosed for laying down a coating of elec. conductive metal on resistive or
      dielec. substrates useful in the electronics industry.  The coating compns.
      provide an ideal combination of high silver loading and low viscosity for
      spray painting desired thickness coatings at high speed in a single pass.  The
      novel compns. include silver flake, water soluble polymer binder, water and a
      substantially completely water soluble, organic co-solvent.  The coating
      compns. have good green strength after drying and may be used to apply an
      elec. conductive base to enable electroplating plastic or elastomer parts.
      Optional sintering adhesives can be added to allow high temperature, permanent
      bonding of the silver to a ceramic substrate.  The coating compns. have
      excellent storage stability such that settled solids can be redispersed
      readily with brief and/or mild agitation.
IC   ICM  H01H0001-22
     ICS  B05D0001-02; B05D0005-12; C09D0005-24
INCL 252514000
CC   76-2 (Electric Phenomena)
IT   Carboxylic acids, uses
     RL: NUU (Other use, unclassified); USES (Uses)
        (lubricants; aqueous silver composition for elec. conductive metal coatings
for
        electronics industry)
IT   111-76-2, 2-Butoxyethanol   111-90-0, Diethyleneglycol monoethylether
     112-34-5, Diethyleneglycol monobutylether   126-86-3, Surfynol 104
     7440-22-4, Silver, uses 7631-86-9, Silicon dioxide, uses
     25322-68-3   25322-68-3D, esters and ethers   25322-69-4, Poly(propylene
     glycol)   25322-69-4D, Poly(propylene glycol), esters and ethers
```

28805-15-4, Darvan C 88650-49-1, Acrysol I-62 177729-29-2,
Acrysol I 2426
RL: NUU (Other use, unclassified); USES (Uses)
(aqueous silver composition for elec. conductive metal coatings for
electronics
industry)
IT 1304-28-5, Barium oxide, uses 1306-19-0, Cadmium oxide,
uses 1314-13-2, Zinc oxide, uses 1317-38-0, Cupric
oxide, uses 1344-28-1, Aluminum oxide, uses 11129-60-5
, Manganese oxide
RL: NUU (Other use, unclassified); USES (Uses)
(sintering adhesive; aqueous silver composition for elec. conductive metal
coatings for electronics industry)
IT 7631-86-9, Silicon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(aqueous silver composition for elec. conductive metal coatings for
electronics
industry)
IT 1304-28-5, Barium oxide, uses 1306-19-0, Cadmium oxide,
uses 1314-13-2, Zinc oxide, uses 1317-38-0, Cupric
oxide, uses 1344-28-1, Aluminum oxide, uses 11129-60-5
, Manganese oxide
RL: NUU (Other use, unclassified); USES (Uses)
(sintering adhesive; aqueous silver composition for elec. conductive metal
coatings for electronics industry)

L43 ANSWER 18 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1995:640908 HCAPLUS Full-text
DN 123:13060
OREF 123:2563a,2566a
TI Electrically conductive antimony indium oxide particles, mixtures
containing the particles, and manufacture of the particles
IN Watanabe, Yoshitane; Suzuki, Keitaro; Iijima, Motoko
PA Nissan Chemical Industries, Ltd., Japan
SO Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 654447	A1	19950524	EP 1994-117941	19941114 <--
	EP 654447	B1	19970402		
	R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
	JP 07144917	A	19950606	JP 1993-314393	19931119 <--
	JP 3198494	B2	20010813		
	CA 2135452	A1	19950520	CA 1994-2135452	19941109 <--
	CA 2135452	C	20000613		
	AT 151058	T	19970415	AT 1994-117941	19941114 <--
	ES 2102753	T3	19970801	ES 1994-117941	19941114 <--
	US 5582909	A	19961210	US 1994-343955	19941117 <--
	US 5756009	A	19980526	US 1996-615957	19960314 <--
	US 5861112	A	19990119	US 1997-977668	19971124 <--
PRAI	JP 1993-314393	A	19931119 <--		
	US 1994-343955	A3	19941117 <--		
	US 1996-615957	A3	19960314 <--		

AB The oxide particles comprising In atoms, Sb atoms and O atoms in In:Sb:O molar ratio 1:(0.02-1.25):(1.55-4.63) and have primary particle diameter 5-500 nm. More specifically, the In:Sb:O molar ratio is 1:(0.83-1.25):(1.55-4.63), and the particles have the crystal structure of In antimonate. Alternatively, the

In:Sb:O molar ratio is 1:(0.02-0.10):(1.55-1.75), and the particles have the crystal structure of In2O3. The particles are manufactured by mixing an In compound with Sb oxide (primary particle diameter 2-300 nm) in In/Sb molar ratio 0.8-50, and calcining the mixture at 700-900°. The particles are suitable for use as elec. conductive agents, antistatic agents, elec. resistors for ceramics, fibers, glass, paper, and plastics, and as fireproofing agents for plastics (because of the Sb oxide). Thus, 900 g water were added to 600 g Sb2O5 sol (d. 1.198 g/cm3; Sb concentration 18.4 weight%; preparation presented), after which a solution of 242.2 g In(NO3)3.3H2O dissolved in 200 g water (In2O3 content 39.1-weight%) was added. The mixture was heated at 90° for 6 h,to obtain a a slurry containing In hydroxide and Sb2O5. The slurry was evaporated to dryness with hot air, and heated at 300° to obtain 223.6 g dry product that was calcined at 780° for 13 h to obtain 182.6 g products having the structure of InSbO4. Comminuted, perss-molded powder had sp. resistance 10 Ω.cm.

IC ICM C01G0030-02
ICS H01B0001-08
CC 49-3 (Industrial Inorganic Chemicals)
ST indium nitrate antimony pentoxide sol; elec conductive oxide indium antimonate
IT Carboxylic acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(indium salts; elec. conductive antimony indium oxide particle manufacture)
IT 1312-43-2, Indium oxide (In2O3) 7440-74-6D, Indium, compds. 13770-61-1, Indium nitrate 55326-87-9, Indium hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(elec. conductive antimony indium oxide particle manufacture)
IT 1314-60-9, Antimony pentoxide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(sols; elec. conductive antimony indium oxide particle manufacture)
IT 1312-43-2, Indium oxide (In2O3)
RL: RCT (Reactant); RACT (Reactant or reagent)
(elec. conductive antimony indium oxide particle manufacture)
IT 1314-60-9, Antimony pentoxide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(sols; elec. conductive antimony indium oxide particle manufacture)

L43 ANSWER 19 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1993:639736 HCAPLUS Full-text
DN 119:239736
OREF 119:42457a,42460a
TI Manufacture of lead zirconium titanate (PZT) sol solution and ferroelectric thin film
IN Kawai, Takashi; Ran, Muneki; Myazaki, Shunichi
PA Yokogawa Electric Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05221643	A	19930831	JP 1991-345574	19911226 <--
PRAI	JP 1991-120304	A1	19910524 <--		

AB The solution is manufactured by dissolving PbO and (MeCO)2O in 2-methoxyethanol, adding alkoxides of Zr, Ti, Sn, and Sb and 3- or 5-valent

metal salts or their alkoxides, and polymerizing The film is manufactured by growing an oriented elec. conducting metal on an oriented oxide film, applying the PZT solution on the film, drying, and heating the coated substrate in an atmospheric containing water vapor and O or air at 450-800° to pyrolyze, crystallize, and orient in the same direction as the metal. The sol solution showed good storage stability and the obtained PZT film on a Pt-coated MgO substrate showed high elec. resistance.

IC ICM C01G0030-00
ICS B01J0019-00; C01G0033-00; C04B0035-49
CC 76-8 (Electric Phenomena)
ST PZT ferroelec sol storage stability; lead oxide sol
PZT film
IT Ferroelectric substances
(PZT, thin film, soluble solution for, with good storage stability)
IT Carboxylic acids, uses
RL: USES (Uses)
(poly-, PZT sol solution containing, for control of viscosity, ferroelec. thin film from)
IT 7440-06-4, Platinum, uses
RL: USES (Uses)
(PZT ferroelec. thin film on, sol solution for, with good storage stability)
IT 7439-91-0D, Lanthanum, compds. 7440-03-1D, Niobium, compds. 7440-31-5D, Tin, alkoxides 7440-32-6D, Titanium, alkoxides 7440-36-0D, Antimony, alkoxides 7440-67-7D, Zirconium, alkoxides
RL: PRP (Properties)
(PZT sol solution containing, with good storage stability, for ferroelec. thin film)
IT 1317-36-8, Lead oxide (PbO), uses
RL: USES (Uses)
(PZT sol solution from, with good storage stability, for ferroelec. thin film)
IT 108-24-7, Acetic anhydride
RL: PRP (Properties)
(PZT sol solution from, with good storage stability, for ferroelec. thin film)
IT 1309-48-4, Magnesium oxide, uses
RL: USES (Uses)
(platinum-coated, PZT ferroelec. thin film on, sol solution for, with good storage stability)
IT 12626-81-2P, PZT
RL: PREP (Preparation)
(preparation of, ferroelec. thin film, sol soln for, with good storage stability)
IT 109-86-4, 2-Methoxyethanol
RL: PRP (Properties)
(solvent, in manufacture of PZT sol solution, with good storage stability, for ferroelec. thin film)
IT 1317-36-8, Lead oxide (PbO), uses
RL: USES (Uses)
(PZT sol solution from, with good storage stability, for ferroelec. thin film)
IT 1309-48-4, Magnesium oxide, uses
RL: USES (Uses)
(platinum-coated, PZT ferroelec. thin film on, sol solution for, with good storage stability)
IT 12626-81-2P, PZT
RL: PREP (Preparation)
(preparation of, ferroelec. thin film, sol soln for, with good storage stability)

L43 ANSWER 20 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1993:24626 HCAPLUS Full-text
DN 118:24626
OREF 118:4557a,4560a
TI Manufacture of titanozirconates of di- and trivalent cations
IN Fourre, Patrick; Ries, Michel
PA Rhone-Poulenc Chimie SA, Fr.
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 504030	A1	19920916	EP 1992-400602	19920309 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, PT, SE				
	FR 2673931	A1	19920918	FR 1991-2941	19910312 <--
	JP 05070131	A	19930323	JP 1992-72197	19920224 <--
PRAI	FR 1991-2941	A	19910312 <--		

AB The process comprises reacting a salt or hydroxide of the cations in basic medium with colloidal anatase-type TiO_2 (obtained by thermal hydrolysis) and ZrO_2. The titanozirconates are especially suitable for the manufacture of capacitors and resistors. Anatase-type colloidal TiO_2 was obtained by boiling an 1M $TiOCl_2$ solution with 0.02 mols citric acid in the presence of 2 weight% seed crystals (based on the TiO_2) for 6 h. A ZrO_2 gel was obtained at <40° from a solution of $ZrO(NO_3)_2$ by addition of 5M NH_4OH to pH 8.5. A mixture of the anatase sol 0.085, the ZrO_2 gel 0.085, and $Ba(OH)_2$ 0.17 mol/kg were hydrothermally reacted in alkaline medium (OH 2 mol/kg) at 200° for 24 h to give spherical $BaTi_{0.5}Zr_{0.5}O_3$ particles having crystallite size 4.16 Å, average diameter 0.060 µm and 75/25 diameter ratio 1.32:1 and sp. surface area 13 m2/g.
IC ICM C01G0025-00
ICS C01G0029-00
CC 49-5 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76
ST colloidal titania amorphous zirconia hydrothermal reaction; titanozirconate hydrothermal crystn; anatase sol amorphous zirconia titanozirconate; barium titanate zirconate hydrothermal crystn
IT Carboxylic acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(amino hydroxy, reaction of, with titanium compds., for colloidal titania in titanozirconate manufacture for capacitors and resistors)
IT Carboxylic acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydroxy, reaction of, with titanium compds., for colloidal titania in titanozirconate manufacture for capacitors and resistors)
IT Carboxylic acids, compounds
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydroxy, salts, reaction of, with titanium compds., for colloidal titania in titanozirconate manufacture for capacitors and resistors)
IT 1314-23-4, Zirconia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(amorphous, hydrothermal reaction of, with, anatase-type colloidal titania and di- and trivalent hydroxides or salts, in alkaline medium, for titanozirconates for capacitors and resistors)
IT 13463-67-7, Titania, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(anatase-type, colloidal, reaction of, with amorphous zirconia and di-

and trivalent hydroxides or salts, in alkaline medium, for titanozirconates
for capacitors and resistors)

IT 135288-18-5P, Barium titanium zirconium oxide (BaTi0.5Zr0.5O3)
145034-33-9P, Barium titanium zirconium oxide (BaTi0.2Zr0.8O3)
RL: PREP (Preparation)
(manufacture of spherical, from colloidal titania and amorphous zirconia and hydroxides or salts, by hydrothermal crystallization in alkaline medium, for capacitors and resistors)

IT 37368-09-5DP, Titanium zirconium oxide, compds. with di- and trivalent oxides
RL: IMF (Industrial manufacture); PREP (Preparation)
(manufacture of, from colloidal titania and amorphous zirconia and hydroxides or salts, by hydrothermal crystallization in alkaline medium, for capacitors and resistors)

IT 1314-23-4, Zirconia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(amorphous, hydrothermal reaction of, with, anatase-type colloidal titania and di- and trivalent hydroxides or salts, in alkaline medium, for titanozirconates for capacitors and resistors)

IT 13463-67-7, Titania, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(anatase-type, colloidal, reaction of, with amorphous zirconia and di- and trivalent hydroxides or salts, in alkaline medium, for titanozirconates for capacitors and resistors)

L43 ANSWER 21 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1992:43759 HCAPLUS Full-text
DN 116:43759
OREF 116:7509a,7512a
TI Manufacture of finely divided powder of titanates of di- and trivalent cations
IN Fourre, Patrick; Ries, Michel
PA Rhone-Poulenc Chimie SA, Fr.
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	EP 448441	A1	19910925	EP 1991-400643	19910308	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE					
	FR 2659641	A1	19910920	FR 1990-3241	19900314	<--
	FR 2659641	B1	19920724			
	CA 2038200	A1	19910915	CA 1991-2038200	19910313	<--
	JP 04238814	A	19920826	JP 1991-73663	19910314	<--
	JP 08005667	B	19960124			
PRAI	FR 1990-3241	A	19900314	<--		

AB The process comprises reacting ≥1 salts or hydroxides of the cations in alkaline medium with colloidal TiO_2 having anatase structure and obtained by thermal hydrolysis of a Ti compound in a medium comprising either a mono- or dicarboxylic acid having ≥2 hydroxyl and/or amine groups or ≥2 carboxyl groups and ≥1 hydroxyl or amine groups. This method is especially suitable for the manufacture of $BaTiO_3$. A solution of $TiOCl_2$ was neutralized with NH_4OH and the resulting TiO_2 sol was reacted with CO_2-free $Ba(OH)_2$ to give $BaTiO_3$ having particle size 0.07-0.2 μm.
IC ICM C01G0023-00
ICS C01G0029-00
CC 49-3 (Industrial Inorganic Chemicals)

Section cross-reference(s): 76

ST titanium oxychloride ammonia titania sol; barium hydroxide titania sol titanate; anatase titania sol barium titanate

IT Alkaline earth compounds
Group IIIA element compounds
RL: USES (Uses)
(titanium oxides, manufacture of fine particulate, from anatase sols and alkaline earth compds.)

IT Rare earth metals, compounds
RL: USES (Uses)
(titanium oxides, manufacture of fine particulate, from anatase sols and rare earth compds., in alkaline medium)

IT Carboxylic acids, compounds
RL: RCT (Reactant); RACT (Reactant or reagent)
(titanium salts, hydrolysis of, for anatase sols in titanate manufacture)

IT 13463-67-7P, Titania, reactions
RL: PREP (Preparation)
(anatase, colloidal, reactions of, with di- and trivalent metal compds. for titanates, preparation from titanium halides and oxyhalides for)

IT 1317-70-0P, Anatase
RL: PREP (Preparation)
(colloidal, reactions of, with di- and trivalent metal compds. for titanates, preparation from titanium halides and oxyhalides for)

IT 77-98-5, Tetraethylammonium hydroxide
RL: USES (Uses)
(crystallization in presence of, hydrothermal, of barium titanate, from anatase sol and barium hydroxide)

IT 12047-27-7P, Barium titanate, preparation
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and barium hydroxide)

IT 12049-50-2P, Calcium titanate
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and calcium hydroxide)

IT 12060-59-2P, Strontium titanate
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and strontium compds., in alkaline medium)

IT 66579-28-0P, Yttrium titanate
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and yttrium compds., in alkaline medium)

IT 12430-73-8P 109414-27-9P, Barium strontium titanate (Ba0.2Sr0.8TiO3)
RL: PREP (Preparation)
(manufacture of monodisperse from anatase sol and barium hydroxide and strontium hydroxide)

IT 110602-72-7P, Barium strontium titanate (Ba0.8Sr0.2TiO3)
RL: PREP (Preparation)
(manufacture of monodisperse, from anatase sol and barium hydroxide and strontium hydroxide)

IT 17194-00-2, Barium hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with anatase sols, for monodisperse barium titanate)

IT 1305-62-0, Calcium hydroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with anatase sols, for monodisperse calcium titanate)
IT 18480-07-4, Strontium hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with anatase sols, for monodisperse strontium titanate)
IT 13463-67-7P, Titania, reactions
RL: PREP (Preparation)
(anatase, colloidal, reactions of, with di- and trivalent metal compds. for titanates, preparation from titanium halides and oxyhalides for)
IT 1317-70-0P, Anatase
RL: PREP (Preparation)
(colloidal, reactions of, with di- and trivalent metal compds. for titanates, preparation from titanium halides and oxyhalides for)
IT 12047-27-7P, Barium titanate, preparation
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and barium hydroxide)
IT 12049-50-2P, Calcium titanate
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and calcium hydroxide)
IT 12060-59-2P, Strontium titanate
RL: PREP (Preparation)
(manufacture of fine particulate, from anatase sols and strontium compds., in alkaline medium)
IT 12430-73-8P
RL: PREP (Preparation)
(manufacture of monodisperse from anatase sol and barium hydroxide and strontium hydroxide)

L43 ANSWER 22 OF 22 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 1990:634151 HCAPLUS Full-text
DN 113:234151
OREF 113:39479a
TI Tin oxide sol and its manufacture
IN Okada, Hitoshi; Matsubayashi, Hiroshi
PA Fuji Titanium Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 02167821	A	19900628	JP 1988-324156	19881222 <--
	JP 2759470	B2	19980528		
PRAI	JP 1988-324156		19881222 <--		

OS MARPAT 113:234151
AB An aqueous SnO2 sol contains ≥1 of XACO2H (I) [X = H, OH, CO2H; A = (CH2)n, CH:CH, CH(OH)CH2, CH(OH)CH(OH), CH2C(OH)(CO2H)CH2; n = 0-3]. Stannic acid is brought into contact with ≥1 of I to give organic acid-containing aqueous SnO2 soluble The sol is useful for transparent conductive membranes for liquid crystalline display devices, solar cells, etc., and transparent oxide ceramics with high conductivity; the sol is especially useful in the coating process to form conductive membranes.
IC ICM C01G0019-02
ICS B01J0013-00
CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76

```
ST   tin oxide sol manuf; org acid tin oxide sol;
     conductive membrane tin oxide coating
IT   Carboxylic acids, uses and miscellaneous
     RL: USES (Uses)
        (tin oxide sols containing, for elec. conductive membranes)
IT   Coating materials
        (elec. conductive, tin oxide sols, preparation of, organic acids in)
IT   1332-29-2P, Tin oxide
     RL: PREP (Preparation)
        (sol, preparation of, organic acid in, for elec. conductive
        membranes)
IT   50-21-5, Lactic acid, uses and miscellaneous   77-92-9, Citric acid, uses
     and miscellaneous   79-14-1, Glycolic acid, uses and miscellaneous
     87-69-4, Tartaric acid, uses and miscellaneous   110-16-7, Maleic acid,
     uses and miscellaneous   141-82-2, Malonic acid, uses and miscellaneous
     144-62-7, Oxalic acid, uses and miscellaneous   6915-15-7, Malic acid
     7440-36-0, Antimony, uses and miscellaneous
     RL: USES (Uses)
        (tin oxide sols containing, for elec. conductive membranes)
IT   1332-29-2P, Tin oxide
     RL: PREP (Preparation)
        (sol, preparation of, organic acid in, for elec. conductive
        membranes)


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MOST RECENT UPDATE:            200902     <200902/DW>
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    September 2008. No update date (UP) has been created for the
    reclassified documents, but they can be identified by 20060101/UPIC,
    and 20061231/UPIC, 20070601/UPIC, 20071001/UPIC, 20071130/UPIC,
    20080401/UPIC, 20080701/UPIC and 20081001/UPIC.
    ECLA reclassifications to mid August and US national classification
    mid September 2008 have also been loaded. Update dates 20080401,
    20080701 and 20081001/UPEC and /UPNC have been assigned to these. <<

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http://scientific.thomsonreuters.com/support/patents/coverage/latestupdates/

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http://www.stn-international.com/DWPIAnaVist2_0608.html

>>> HELP for European Patent Classifications see HELP ECLA, HELP ICO <<<


'BI ABEX' IS DEFAULT SEARCH FIELD FOR 'WPIX' FILE

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L62 ANSWER 1 OF 4 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2008-K90412 [64] WPIX Full-text
CR 2005-425020
DNC C2008-315733 [64]
DNN N2008-797319 [64]
TI Surface modified soluble metal oxide crystallite particles, useful e.g. in catalytic composition and fire retardant composition, comprises many metal and oxygen moieties having carboxylate groups
DC B07; D21; D22; E19; G02; J04; L01; L03; P73; U14
IN CLANCY-CUNNINGHAM P; CUNNINGHAM P D; MCMANUS J
PA (UYNA-N) UNIV NAT IRELAND GALWAY
CYC 1
PIA US 20080138600 A1 20080612 (200864)* EN 65[40] <--
ADT US 20080138600 A1 CIP of US 2006-580097 20060519;
US 20080138600 A1 US 2007-925095 20071026
PRAI US 2007-925095 20071026
US 2006-580097 20060519
AB US 20080138600 A1 UPAB: 20081008
NOVELTY - Surface modified soluble metal oxide crystallite particles (I) comprises many metal and oxygen moieties having a sufficient number of carboxylate groups, from carboxylic acid used to modify the surface of the metal oxide, attached to the surface metal atoms so as to allow the surface modified metal oxide to be solubilized.
DETAILED DESCRIPTION - Surface modified soluble metal oxide crystallite particles (I) comprises many metal and oxygen moieties having a sufficient number of carboxylate groups, from carboxylic acid used to modify the surface of the metal oxide, attached to the surface metal atoms so as to allow the surface modified metal oxide to be solubilized, where the carboxylic acid: is a cyclic 1-20 carbon aliphatic organic acid, acyclic-1-20 carbon-aliphatic organic acid, 6-20 carbon aromatic organic acid, monocarboxylic acids, dicarboxylic acids and/or tricarboxylic acids; and is optionally substituted one or more times with halo, alkoxy and/or hydroxyl. INDEPENDENT CLAIMS are included for:
(1) a coating applied to a substrate comprising: (I) and optionally doped with at least one further metal; (2) a catalytic composition adapted for use as a coating for a substrate, where the catalytic composition comprising: (I), where the soluble metal oxide is optionally doped with at least one further metal, optionally in solution, or optionally doped with at least one further metal and in solution; and (3) a fire retardant composition adapted for use as a coating for a substrate, where the fire retardant composition comprises (I), optionally doped with at least one further metal.
USE - (I) is useful in catalytic composition and fire retardant composition. (I) is useful for coating a substrate, where the substrate forms part of either an electronic device or an electrochromic device. (I) is useful as a friction reducing coating for substrates. (I) is useful for coating a substrate to form an electrically conductive pathway or impart a desired refractive index or color to the substrate, where the substrate has moving parts. (I) is useful for coating: a pharmaceutical preparation; a medical device; and a device for implantation into the human or animal body (all claimed), where the medical device is stent (to improve blood flow through the stent), orthopedic implant e.g. prosthesis, or dental implant or spinal implant. (I) is useful: for coating drug cocktails to produce sustained release tablets, where the coatings is useful for the sustained release of pesticides, insecticides, dyes and fragrances; to coat the moving parts of engines and machinery; as spacer layers in metal enhanced fluorophores (sensing platforms); and in domestic glass coatings. (I) is useful for forming: transparent conducting films; and biocompatible films or coatings having drug retention and release properties. (I) is useful to reduce the

coefficient of friction of moving parts e.g. engine parts. (I) is useful for monitors to reduce glare.
ADVANTAGE - The coating has: a roughness factor (Ra) of less than or equal to 0.6 nm; Young's modulus of 66 Gpa; and delamination of the coating from a substrate on which it is coated occurs at a load of greater than 6 mN. (I) increases fluorescence emission in a fluorophore (all claimed). (I) has excellent long term stability in solution even on exposure to air having important implications for storage. (I) improves impact resistance and thermal characteristics of domestic glass coatings and plate glass coatings. The coating possesses desirable characteristics such as scratch resistance, smoothness, elasticity and porosity. DESCRIPTION OF DRAWINGS - The figure shows the porosity of titanium(IV) oxide coatings deposited on stainless steel at high magnification and annealed at 800 degrees C.

TECH

INORGANIC CHEMISTRY - Preferred Components: The dopent metal is tin, indium, antimony, zinc, titanium, vanadium, chromium, manganese, iron, ruthenium, osmium, tungsten, cobalt, nickel, zirconium, molybdenum, palladium, iridium and/or magnesium. The soluble metal oxide comprises a solvent for use in the preparation of a solution, where the solvent of the solution is tetrahydrofuran, dimethylformamide, dimethyl sulfoxide, ethyl acetate, amyl acetate, pyridine, water, acetophenone, isophorone, an alcohol of formula (R1-C(R2)(R3)-OH), an ether compound of formula (R3-O-R4), a ketone compound of formula (R5COR6), a diketone compound of formula (R5COCH2COR6) or 5-12C cyclic ketone (optionally substituted with methyl and/or optionally unsaturated groups of cyclopentanone, 2-methylcyclopentanone, 3-methylcyclopentanone, cyclohexanone, 2-methylcyclohexanone, 3-methylcyclohexanone, 4-methylcyclohexanone, 3,3,5-trimethylcyclohexanone, 3,5,5-trimethyl-2-cyclohexene-1-one (isophorone), 2-cyclohexene-1-one, 3-methyl-2-cyclohexene-1-one and/or 3-methyl-5-heptene-2-one).

R1, R2 = H or CH3;
R3 = H, CH3 or (CH)nCH3;
n = 0-5, preferably 2;
R3 = CH2CH3, CH3 or (CH2)3CH3;
R4 = CH2CH3 or (CH2)3CH3; and
R5, R6 = (CH2)nCH3.

ORGANIC CHEMISTRY - Preferred Components: The carboxylic acid is monohaloacetic, fluoroacetic, chloroacetic, bromoacetic, iodoacetic, dihaloacetic, difluoroacetic, dichloroacetic, dibromoacetic, diiodoacetic, trihaloacetic, trifluoroacetic, trichloroacetic, tribromoacetic, triiodoacetic, mixed dihaloacetic, chlorofluoroacetic, bromofluoroacetic, iodofluoroacetic, bromochloroacetic, iodochloroacetic, iodobromoacetic, mixed trihaloacetic, chlorodifluoroacetic, bromodifluoroacetic, iododifluoroacetic, fluorodichloroacetic, bromodichloroacetic, iododichloroacetic, fluorodibromoacetic, chlorodibromoacetic, iododibromoacetic, fluorodiiodoacetic-, chlorodiiodoacetic, bromodiidoacetic, monoalkoxyacetic, dialkoxyacetic, trialkoxyacetic, methoxy acetic, ethoxy acetic, dimethoxy acetic, diethoxy acetic, triethoxy acetic, hydroxyacetic, dihydroxyacetic, monohalopropanoic, dihalopropanoic, trihalopropanoic, tetrahalopropanoic, pentahalopropanoic, mixed dihalopropanoic, mixed trihalopropanoic, mixed tetrahalopropanoic, mixed trihalopropanoic, mixed tetrahalopropanoic, mixed pentahalopropanoic, 2-hydroxypropanoic, 3-hydroxypropanoic, 2,3-dihydroxypropanoic, 2,2-dihydroxypropanoic, propenoic, oxalic, malonic, succinic, acetic, cyanoacetic, propanoic, tartaric, and/or citric acid. The coating is porous and the pores in the porous coating are sized for adsorption of at least one of a chemical or biological agent. The adsorption of least one of a chemical or biological agent allows: sustained release of the chemical or biological agent; or retained

adsorption of the molecule. The coating is adapted for application to the substrate to form an electrically conductive pathway or impart a desired refractive index or color to the substrate.

ABEX EXAMPLE - Insoluble hydrous tin oxide (10.5 g) was added to glacial acetic acid (100 cm3) to provide a tin oxide suspension. The suspension was stirred for 1 hour at room temperature. No apparent dissolution of the insoluble tin oxide was noted. The tin oxide suspension was heated to a temperature of approximately 85 degrees C and at this temperature the oxide was slowly consumed into the solution. When the temperature was approached 100 degrees C the solids had completely disappeared to give a clear solution. Heating was discontinued and the solution was filtered. The acetic acid was removed at a pressure of 17 mm. Mercury was provided by a water pump to obtain soluble tin oxide particles.

L62 ANSWER 2 OF 4 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2005-425020 [43] WPIX Full-text
CR 2008-K90412
DNC C2005-130440 [43]
DNN N2005-344987 [43]
TI Soluble metal oxide used as catalyst for metal film formation, comprises metal oxide crystallite particle(s) having oxygen group and metal group attached to inner organic binding group that is attached to outer organic binding group
DC B07; D22; E19; J04; L01; L02; L03; M25; P73; U11; U14; X12
IN CUNNINGHAM P D; MCMANUS J
PA (UYNA-N) UNIV NAT IRELAND GALWAY; (CUNN-I) CUNNINGHAM P D; (MCMA-I) MCMANUS J
CYC 107

PIA	WO 2005049520	A2 20050602	(200543)*	EN	78[9]	
	EP 1685199	A2 20060802	(200650)	EN		
	AU 2004290656	A1 20050602	(200680)	EN		
	JP 2007514632	W 20070607	(200739)	JA	46	
	CN 1902287	A 20070124	(200740)	ZH		
	US 20070140937	A1 20070621	(200741)	EN		<--

ADT WO 2005049520 A2 WO 2004-IE163 20041122; AU 2004290656 A1 AU 2004-290656 20041122; CN 1902287 A CN 2004-80039137 20041122; EP 1685199 A2 EP 2004-799304 20041122; JP 2007514632 W JP 2006-540766 20041122; US 20070140937 A1 US 2006-580097 20060519; EP 1685199 A2 PCT Application WO 2004-IE163 20041122; JP 2007514632 W PCT Application WO 2004-IE163 20041122; US 20070140937 A1 PCT Application WO 2004-IE163 20041122
FDT EP 1685199 A2 Based on WO 2005049520 A; AU 2004290656 A1 Based on WO 2005049520 A; JP 2007514632 W Based on WO 2005049520 A
PRAI IE 2003-869 20031121
AB WO 2005049520 A2 UPAB: 20051222
NOVELTY - A soluble metal oxide comprising one or more metal oxide crystallite particles each comprising several metal and oxygen groups, where at least one metal group is attached to an inner organic binding group and an outer organic binding group is attached to at least one inner organic binding group, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for: (1) soluble mixed metal oxide comprising the soluble metal oxide in which each crystallite particle further comprises metal ion(s) attached to the particle; (2) preparation of metal oxide solution, which involves adding insoluble hydrous metal oxide to sufficient amount of organic acid to provide metal oxide suspension such that the solution is formed during heating and heating the suspension until the suspension forms a solution; (3) preparing soluble metal oxide by removing the organic acid from the metal oxide solution; (4) preparing a mixed metal oxide solution, which involves adding a metal to the metal oxide solution and filtering the solution; (5) preparation of soluble

mixed metal oxide by removing the organic acid from the mixed metal oxide solution;
(6) metal oxide solution;
(7) mixed metal oxide solution; (8) metal oxide film formed from the solution;
(9) mixed metal oxide film formed from the solution;
(10) modifying the solubility of the soluble metal oxide, which involves heating the soluble metal oxide to 300 degrees C or less to provide an insoluble metal oxide, adding insoluble metal oxide to sufficient amount of organic acid to form metal oxide suspension, heating the metal oxide suspension until suspension forms a solution and removing the acid to provide soluble metal oxide having modified solubility; and
(11) extraction of tin from mixed tin, antimony and iron ore, which involves dissolving the ore in a mineral acid to form mineral acid solution comprising aqueous tin, antimony and iron species, increasing the pH of solution to form hydrous tin, antimony and iron oxides within the solution and to precipitate hydrous tin, antimony and iron oxides from solution, adding excess amount of organic acid to the hydrous oxides to form organic acid suspension, heating the suspension, filtering the suspension and removing the organic acid to provide soluble tin oxide with iron residue.
USE - The soluble metal oxide, metal oxide solution, soluble mixed metal oxide and mixed metal oxide solution are used as a catalyst (claimed). The soluble metal oxide and mixed metal oxide, preferably tin oxide is used for providing thin impact resistant tin coating on domestic glassware, window glass to reflect indoor heat inwards in winter and reduce solar heating in summer, as transparent conducting films for forming biocompatible films having drug retention and release properties, and for transparent electrodes in construction of solar cells, electrochromic cells and liquid crystal displays, for car and aircraft windscreens, for use in monitors to reduce glare, for improving bonding characteristics for high-alumina dental ceramics, as gas sensors in industries, for reducing surface friction in moving portions of engines, hip replacements and stents and for use as catalyst. The metal oxides and mixed metal oxide solutions are used as precursors for fabrication of doped metal films usable in electronic industry, monoliths, castings and catalysts, and as precursors for formation of ceramic color pigments.
ADVANTAGE - The soluble metal oxide can be dissolved in a solvent to provide a solution or stored in the form of powder and redissolved in an appropriate solvent to form a solution. The soluble metal oxide is therefore extremely flexible as it is used to provide a number of solutions usable in several applications. The soluble metal oxide forms true solutions, therefore obviating the need for undesirable additives such as dispersant. Due to enhanced surface activity and chemical reactivity of metal oxide in solution, they can be usefully employed to produce doped and conducting metal oxide films for electronic industry and gas sensor devices. The inner and outer organic binding groups allow increased solubility of metal oxide particles in organic solvent. The preparation of metal oxide solution and soluble metal oxide is a fast, inexpensive and eco-friendly process. The removal of organic acids at elevated temperature during formation of metal oxide films does not leave groups that would introduce undesirable impurities into metal oxide. The addition of phosphate groups for surface modification of metal oxide improves the biocompatibility. The soluble metal oxides and mixed metal oxides have excellent long term stability in solution even on exposure to air, having important implications for storage and do not contain any material which can interfere with the metal oxide during processing.
DESCRIPTION OF DRAWINGS - The figure shows the process outline for preparation of soluble metal oxide.

TECH

INORGANIC CHEMISTRY - Preferred Materials: Each crystallite particle further comprises hydroxyl group(s). The inner organic binding group is attached to metal group by a covalent bond and outer organic binding group is attached to each inner

organic binding group by a hydrogen bond. The acid is formic acid or acid of formula (2). The soluble metal oxide has formula: (((MOm)n(OH)p)Xq/Yr)/(H2O)s and soluble mixed metal oxide has formula: (((MOm)n(OH)p)M'cXqYr)/(H2O)s.

M = metal group;
O = oxygen group;
m = variable dependent on oxidation state of metal group (M) ranging from 1-3;
n = number of metal oxides in crystallite particle;
OH = hydroxyl group;
M' = metal ion chosen from tetravalent tin, divalent tin, tetravalent titanium, divalent titanium, indium, antimony, zinc, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, zirconium, molybdenum, palladium, iridium and magnesium;
X = inner organic binding group of formula (1);
Y = outer organic binding group of formula (2);
H2O = hydrogen bonded water;
p,q,r,s = variable dependent on the number of metal oxides in the crystallite particle (n), and reaction conditions;
R1-R3 = organic group, halo organic group, H or halogen, preferably optionally branched or cyclic 1-20C organic group, optionally branched or cyclic halo 1-20C organic group containing up to 41 halogen atoms, H or halogen;and
R1-R3 of X in mixed metal oxide = optionally branched or cyclic 1-20C organic group, optionally branched or cyclic halo 1-20C organic group containing up to 40 halogen atoms, H or halogen.

Each metal oxide crystallite particle is a nanocrystallite particle having average particle size of 5-100 Angstrom. The metal group is tin and/or titanium. The inner organic binding group is attached to metal group or both metal group and metal ion, and outer organic binding group is attached to metal ion or inner organic binding group or to both metal ion and inner organic binding group. The metal ions are attached to oxygen group, hydroxyl group, inner organic binding group or outer organic binding group. Each inner organic binding group is attached to each metal group by a covalent bond and to each metal ion by either a covalent bond or a donor bond. Each outer organic binding group is attached to each inner organic binding group by a hydrogen bond and to each metal ion by either a covalent bond or a donor bond. Each metal ion is attached to each oxygen group by a covalent bond, to each hydroxyl group by either a donor bond or a covalent bond, to each inner organic binding group by either a covalent or a donor bond, and to each outer organic binding group by either a covalent or a donor bond.

Preferred Process: The soluble metal oxide is dissolved in a solvent to provide a solution and metal is added to the solution and filtered to prepare mixed metal oxide solution. The solution is heated before filtration and the metal is added in powder form. A soluble metal oxide suitable for dissolving in target organic solvent is prepared by selecting the target solvent, determining organic binding group which when attached to insoluble metal oxide would allow the metal oxide to dissolve in target solvent, selecting an organic acid suitable for providing organic binding group and preparing the soluble metal oxide using the selected organic acid. During the extraction of tin from mixed tin, antimony and iron ore, the soluble tin oxide with iron residue is dissolved in organic solvent to form a solution which is maintained for at least 24 hours, the solution is filtered to remove iron residue and

organic solvent is removed to provide soluble tin oxide.
ORGANIC CHEMISTRY - Preferred Solvent: The target solvent is chosen from tetrahydrofuran, dimethylformamide, dimethyl sulfoxide, ethyl acetate, amyl acetate, pyridine, water, alcohol of formula: R1R2R3(C)OH, ether of formula: R1-O-R2 and ketone of formula: R1COR2.
R1-R3 in alcohol = H or methyl, or R1,R2 is H and R3 is (CH)nCH3, or R1 is H and R2,R3 is methyl, or R1 is H, R2 is methyl, R3 is ethyl;
R1,R2 in ether = ethyl or R1 is methyl and R2 is ethyl or R1 and R2 is (CH2)3CH3;
R1 and R2 in ketone = (CH2)nCH3 or R1 is CH3 and R2 is ethyl; and n = 0-5.
Preferred Acid: The acid used for modifying the solubility of soluble metal oxide is orthophosphoric acid, phosphorous acid, hypophosphorous acid, organic phosphonic acid, organophosphinic acid, organoarsinic acid or sulfonic acid. The acid is replaced with a non-acid selected from 8-hydroxyquinoline, polyethylene glycol or a non-acid which is capable of hydrogen bonding.

ABEX EXAMPLE - Insoluble hydrous tin oxide was obtained and dried at room temperature until the tin oxide crumbled into a powder. The dried insoluble hydrous tin oxide (10.5 g) was added to glacial acetic acid (100 cm3) to obtain a tin oxide suspension. The suspension was stirred for 1 hour at room temperature and heated to 85 degrees C, during which the oxide was slowly consumed into the solution. When the temperature reached 100 degrees C, the solids disappeared completely giving a clear solution. The heating was stopped and solution was filtered. Acetic acid was removed and remaining white solid was soluble tin oxide. The tin oxide had carbon content of 9-10 % and acetate content of 22-24 %. The oxide was found to be soluble in cold glacial acetic acid and cold methanol and had same solubility in ethanol and water. The average particle size of soluble tin oxide was calculated to be 19 Angstrom. The infrared spectra of soluble tin oxide at room temperature showed very broad absorption at 1450-1650 cm-1.

L62 ANSWER 3 OF 4 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2004-194212 [19] WPIX Full-text
DNC C2004-077045 [19]
TI Manufacture of low-valence metallic oxide particles, e.g. used as ultrafine particles, for conductive materials, involves heating and reacting mixture of metal carboxylate salt, alcohol and pyrrolidone compound
DC A60; B07; E13; E37; G02; L03
IN TAKEDA M
PA (JAPC-C) NIPPON SHOKUBAI CO LTD
CYC 1
PIA JP 2002362909 A 20021218 (200419)* JA 8[0]
ADT JP 2002362909 A JP 2001-170136 20010605
PRAI JP 2001-170136 20010605
AB JP 2002362909 A UPAB: 20050528
NOVELTY - Manufacture of a low-valence metallic oxide group particle involves heating and reacting a mixture containing a metal carboxylate salt, an alcohol and a pyrrolidone compound.
USE - For manufacturing low valence metallic oxide group particles, e.g. used as ultrafine particles, for conductive materials (electronic conductor), insulator material, semiconductor material, ion conductor material, optical absorber material, light-emitting body material, phosphor magnetic recording material, non-linear optics material and ferroelectric material. Particularly, low-valence metallic oxide group particles, such as cupric oxide, are used to form a metal film ink, as coating material, as adhesive improvement agent of metal films, such as copper film, and plastic films, such as a polyimide film and as an additive during formation of a metal film using metal paste.

ADVANTAGE - The metallic oxide particles have excellent monodispersibility and stability. The metallic oxide particles of required particle diameter and particle size distribution are obtained inexpensively.

TECH

INORGANIC CHEMISTRY - Preferred Process: Alternatively, manufacture of the metallic oxide particles involves heating and reacting a mixture containing a metal alkoxy-group compound, a carboxy compound and pyrrolidone compound.

ABEX EXAMPLE - A mixture containing ethylene glycol as alcohol (in weight parts) (135), N-methyl pyrrolidone (20) and copper acetate (II) as metal carboxylate salt (18) was heated in the reactor in the nitrogen atmosphere. The temperature of 200 degreesC was maintained in the reactor for 4 hours. Microparticles obtained from the reaction solution after cooling were separated in a centrifuge, vacuum-dried and analyzed. From a X-ray diffraction analysis, (copper I) oxide group particles had a diameter of 31 nm and was confirmed to be a cupric oxide microparticles.

L62 ANSWER 4 OF 4 WPIX COPYRIGHT 2009 THOMSON REUTERS on STN
AN 2003-816503 [77] WPIX Full-text
DNC C2003-227581 [77]
TI Manufacture of metallic oxide particles, used as e.g. a semiconductor material, involves heating and reacting a moisture-free mixture containing metal alkoxide and carboxy-containing compound
DC B07; E33; E37
IN TAKEDA M
PA (JAPC-C) NIPPON SHOKUBAI CO LTD
CYC 1
PIA JP 2002362923 A 20021218 (200377)* JA 9[0]
JP 3974756 B2 20070912 (200761) JA 12
ADT JP 2002362923 A JP 2001-170134 20010605; JP 3974756 B2 JP 2001-170134 20010605
FDT JP 3974756 B2 Previous Publ JP 2002362923 A
PRAI JP 2001-170134 20010605
AB JP 2002362923 A UPAB: 20050531

NOVELTY - A moisture-free mixture containing a metal alkoxide and a carboxy-containing compound, is heated to produce metallic oxide particles.

USE - For manufacturing metallic oxide particles used as a semiconductor material, electro-conductive material, light absorber, light-emitting material, magnetic (light) recording material, non-linear optics material and a ferroelectric material.

ADVANTAGE - The metallic oxide group particle has excellent dispersibility of single metallic oxide, solid solution oxide and a complex oxide.

TECH

INORGANIC CHEMISTRY - Preferred Property: Moisture content of the mixture, in the molar ratio is less with respect to the metal atom in the metal alkoxide. Molar ratio of the carboxy-containing compound with respect to metal alkoxide in the mixture is more than 0.8 n, where n is the valency of the metal atom in metal alkoxide.

ABEX EXAMPLE - Acetic acid (in weight parts) (48) as carboxy-containing compound, propylene-glycol methyl-ether acetate (400) as non-aqueous solvent and titanium n-tetra butoxide (68) as metal alkoxide, were mixed and heated in a reactor substituted with nitrogen. Moisture content of the solution was below the threshold measurement. The solution was heated at 260 degrees C for 5 hours and then cooled to obtain a dispersion of anatase-type titanium oxide particles having size of 7 nm. Oxide concentration in the particle was 83 wt.% with respect to the particle and yield with respect to the prepared raw material was 99% or more. The reaction solution was analyzed and contained butyl acetate (85) and water (7). Free acetic acid was undetectable in the reaction solution.

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L2            2 S L1 AND (CUNNINGHAM? OR MCMANUS?)/AU
                E CUNNINGHAM/AU
                E CUNNINGHAM P/AU
L3           55 S E3,E7,E8,E19,E24-E26
                E MCMANUS/AU
                E MCMANUS J/AU
L4          309 S E3-E17,E19-E29
                E MC MANUS J/AU
                E MC MANUS/AU
                E N U/CO
                E NAT U/CO
                E NATL U/CO
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                E NATION U/CO
                E NATIONAL U/CO
                E NATIONAL UNIV/CO
L6           20 S E26,E27/CO,PA,CS
                E NATIONAL UNIVER/CO
                E NATIONAL UNIVERSITY IR/CO
L7           16 S E4,E5/CO,PA,CS
                E NATIONAL UNIVERSITY OF I/CO
L8         1827 S E4-E43/CO,PA,CS
                E E4+ALL
L9         1733 S E2+RT OR E2-E8/PA,CS
L10      115205 S METAL OXIDE
                E METAL OXIDE/CT
                E E6+ALL
                E E2+ALL
L11       64401 S E3,E4
L12       43395 S "OXIDES (INORGANIC)"?/CT
L13     2667750 S E3+NT
                E E575+ALL
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L15     2723080 S L10-L14
L16         154 S L1-L9 AND L15
L17      438978 S L15 AND ?CRYS?
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L24          49 S L21 AND E35,E36
L25           1 S L16 AND L20
L26           1 S L16 AND CARBOXYLIC ACID?/CT
L27           2 S L2,L25,L26
L28         150 S L21-L24
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L30          83 S L28 AND (PD<=20041122 OR PRD<=20041122 OR AD<=20041122) AND P
L31           1 S L29 AND 1996:673533/AN
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L33           5 S L30 AND C09C/IPC,IC,ICM,ICS,EPC
L34          23 S L32,L33
L35          23 S L34 AND (?CRYS? OR ?POWD?)
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L36          18 S L35 NOT E1-E5
L37          65 S L30 NOT L36
L38           2 S L37 AND (136:317170 OR 133:81845)/DN
L39          20 S L36,L38 AND L1-L38
L40          81 S L15 AND BINDING GROUP
L41          26 S L40 AND ?CARBOXYL?
L42           2 S L41 AND (2009:30310 OR 2008:837925)/AN
L43          22 S L39,L42

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     FILE 'WPIX' ENTERED AT 14:00:47 ON 15 JAN 2009
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L46        7471 S (C01G001-02 OR C01G003-02 OR C01G005 OR C01G007 OR C01G009-02
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L56           1 S L46-L47 AND MCMANUS?/AU
L57           9 S L44,L53-L56
                SEL AN 1 6 7 8 9
L58           4 S L57 NOT E10-E14
L59           1 S L47 AND BINDING GROUP
L60           4 S L58,L59
L61           2 S L60 AND (COOH OR COO OR ?CARBOXYL?)
L62           4 S L60,L61

     FILE 'WPIX' ENTERED AT 14:14:10 ON 15 JAN 2009

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